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ORIGINAL ARTICLES.

TRADITIONAL TREATMENT OF LEPROSY IN JAPAN AND CHINA.

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NEW YORK.

"Kattai no kasa urami."—urayami—(the leper's envy of a syphilitic.)—*Japanese Proverb.*

There is a Japanese treatise on syphilis and leprosy published by Katakara Genshiu, Tokio, 1781, on which I wish to make a few observations. The preface of this book also alludes to the oft-quoted anecdote which seems to imply that leprosy existed at the time of Confucius. It is said that one of the great man's disciples being ill, his master went to see him, but staid outside and contented himself with shaking hands through the window casement, expressing his regret that his friend should have "that hateful disease." It is generally supposed that he meant leprosy. The preface of our book approves the cautious conduct of the master. "For, it is said, in later times special hospitals and houses were erected for lepers, so that their disease might not be mixed with other maladies."

(The work on syphilis has a preface of its own in which it is stated that this disease first received its special name in the early part of the Yuen dynasty, (A.D. 1260–1368). Katakara Genshiu says it is not mentioned as yo-bai-so (syphilis) in the most ancient Chinese medical books; the "So-mon-nai-kei" a Chinese medical book the most ancient of all), the "Rei-shin-sho," (Chinese book of medical marvels), the "Kinki-sho-kan-ron" (Golden Chest, A.D. 200), the "Shin-no-kei" (Method of Schoochuke, Chinese Hippocrates),[1] the "Byo-gen-ron" (Theory of Disease), the "In-sho-ku," (Diseases of Penis) and the "In-so" (Sores of Penis).

Syphilis appeared first in the swamps of Southern China; in Japan it made its first appearance in the province of Hijen. It was not so widespread in those remote times, as it is in our days. It is more generally cured now than formerly. It seems that five out of ten people are syphilitic in China as well as in Japan.

The author understands syphilis perfectly; its causes, its transference by inoculation, its transmission to the offspring, the danger of infection through cutaneous disease, especially itch. The author in describing secondary and tertiary syphilis confounds evidently mercurial salivation with the latter; for he speaks of the putrefaction of the gums, pains in the tongue, cracks on the side of the tongue, a continuous flow of saliva, bell-like sounds in the ears, etc. Describing the various forms of syphilis, he declares that, in spite of the great variety of appearances, the poison in all cases is identical. He knows the danger of transference from the mouth. He mentions also the late manifestations of syphilis.

In the preface to the volume on leprosy, we read that a method of cure had been adopted in the time of the Sung and Yuen dynasties (A.D. 960–1278 and A.D. 1260–1368). As to his own method, the author assures us that it will cure the patient in the space of three months. This method of cure of the author consists in driving out noxious insects by medicines, and eliminating bad blood by moxæ and acupuncture. He tried his method on his own showing with excellent results in various provinces (Yamashiro, Settsu, Isé, Kii).

Among the causes of leprosy he mentions putrefaction of the blood by heat. He refers to some authors as having placed the origin of leprosy in the veins afflicted with catarrh. The writer, and all the authorities which he quotes, consider leprosy as related in some obscure way with cold; it may owe its origin to sleeping in the open air, or in swampy places, being exposed to the vitiated air emanating from water closets. Eating fat aliments, excessive sexual intercourse, neglecting to clear out the bad blood after childbirth, are also incriminated. But in all these cases, there has been, for several years before the outbreak, an insect in the body, whose presence is indispensable to the operation of the exciting cause; possibly he means a bacillus.

People of beautiful white complexion are very prone to contract the disease; however caused, the disease yields always to the same treatment.

The author cautions all doctors not to confound certain forms of alcoholism with leprosy; these forms of alcoholism are unknown to us.

Some of the Chinese names of leprosy embody the belief in an origin of the disease through cold; great cold wind, great paralyzing cold wind, great wind eruption, hateful great wind, great skin catarrh, influencing or favoring catarrh (influenza), unfavorable catarrh, penetrating catarrh, leaking catarrh, wet catarrh, incurable catarrh, filth catarrh.

Other denominations emphasize the influence of humidity: Swamp-filth poisoning, wood or forest-filth poisoning,[2] fire-filth poisoning,[2] metal filth-poisoning,[2] earth-filth poisoning,[2] water-filth poisoning,[2] cricket or swamp-insect poisoning, rain-filth poisoning. There are some other names: Numbness poisoning, human insect poisoning, black disease poisoning. It is also called Confucius disciple (Hakugin) disease, from the student before mentioned; mutilating disease, insect-mutilating disease, bursting melon disease are other names. The most commonly used is the great wind catarrh disease.

Some cases are absolutely incurable; it is useless to attempt to cure a patient whose eyes have a yellow hue, whose finger nails have no white crescents at the

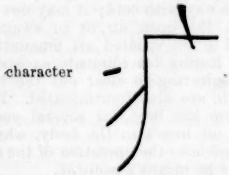
[1] Author of the Shookauron (Treatise on feverish diseases) composed 350 years before Christ.

[2] Referring to the five elements.

bottom, whose hands are wholly anesthetic, whose palm or sole bleeds, whose eyeballs are ulcerated, whose penis is putrified, whose hands or feet are clawed, whose skin is spotted with black, whose fingers have melted off, leaving frog-foot shaped ends, whose body hairs fall off, whose nose is gone, whose bones are poisoned and putrified, drunkards and debauchees, a too frequent bather, men who contract the disease after their fortieth year, people with very emaciated bodies.

Chinese and Japanese character for leprosy.

This is a combination of the



character = disease,

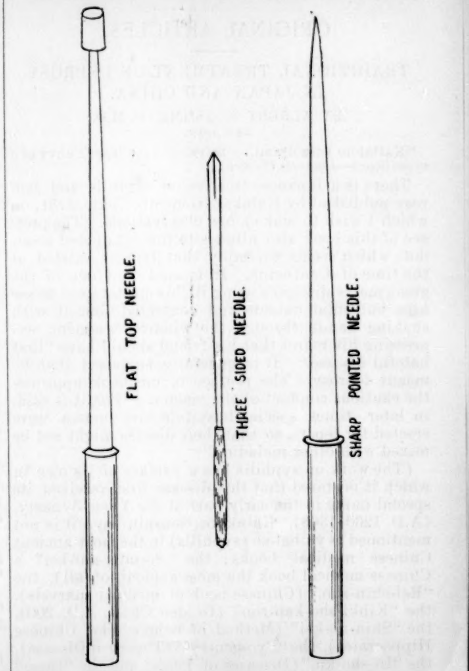
and character = wind or catarrh.

Treatment.—The disease is to be treated in accordance with the condition of the temperature, and the degree of the disease, whether severe or mild. Apply moxæ below the eleventh vertebra three times a day, and various Chinese medicines, of which we know nothing.

In mild cases draw the corrupt blood by acupuncture. The needles must be used within the circumference of the spots; in severe cases they are to be heated, and applied red hot inside the margins of the sores. But, unfortunately the manner of using these hot needles as Dr. Chan used them is, in a measure lost; the most effective part of it, at least, that is the shape of the needles. The needles used by the writer are, says he, different from the ancient sort, and he uses thirteen in number, instead of the prescribed number, whatever that might have been. The length of the needle is seven and one-half inches (Japanese inch is ten inches to the foot). The end of the needle is sharp and round, the handle is hexagonal in shape, three inches long. One of the thirteen needles is flat-headed. They are made of ordinary iron which in Japan is magnetic.

The manner of application is as follows:

Let the patient sit down naked, in a darkened room; burn camphor as a light, and examine the entire surface of the body. In this way the poison under the skin, may be seen plainly by the physician. Circumscribed blood spots of various shapes, round and square, oval and irregular will appear beneath the skin. If they are scarlet, the poison is not severe;



if dark purple, it is of great strength. The physician marks with ink the circumferences of these spots as they are seen by the reflected camphor light. The spots are mostly on the face, hands, feet and neck; very few of them are found on the chest and abdomen. Open the windows and puncture the spots with the red hot needles, the latter heated in a charcoal fire, are used one by one within the marked places. Generally there is no bleeding, nor is there any pain felt; if there is bleeding and pain the spot operated on is not leprous. The needles may be introduced even to the depth of an inch, without causing any pain. After these operations, the patient's body shows high temperature, his face reddens, his mouth is dry, and there is headache and intense thirst. Give him warm water to drink, and apply the hot flat-top needle to his bald vertex with a quick touch; thereupon he feels relief.

The needles are used three days in succession; on the second day, the acupunctures are made in the intervals between the first day punctures, when, how-

ever, the needle can not penetrate deep without causing pain; on the third day again, puncture in the existing intervals.

There is a test for leprosy which the writer makes before he operates. He pulls out some hairs, and if they yield easily, the patient is leprous. After the operation the hair, in this case, is not so easily pulled out, which the author considers as a proof that already the blood has acquired additional strength.

At the first outbreak of the disease, the sufferer loses the skin sensibility, and feels an itching sensation like insects crawling under the skin; coldness in the finger-tips, cold and hot flashes over the body, severe pains in hands and feet, pinching pains in thighs, formications all over the body. If the skin is scratched there forms a scab. The outside of hands and feet turn as cold as ice, while scurf develops on the skin; loss of sensibility in little finger and little toe; swellings appear on trunk and hands. Under these circumstances the author advises the burning camphor skin-illumination, the use of three-cornered needles, and the application of his own special Chinese medicaments. The cure may be expected in forty or fifty days.

In a severe case of leprosy, the body becomes tuberculated, the color of the skin turns into purple; eruptions of egg or cannon-ball size appear, and their places swell near a fire. After a few days, the top of the eruptions break and yellow water oozes out; it looks very much like a burn. Now the eyebrows and lashes fall out, and there is a strange flash in the eyes. The skin becomes like the bark of a tree, the fingers bend, the expression of the face loses all brilliancy and turns ashy white; swellings and pains in bones; voice becomes rasping (leper's croak); ringing in the ears; total anesthesia. The eruption may disappear in one place, and reappear in another. No pain felt when hairs are pulled out. In these cases the author is confident that by using his method, and applying the needles for three days, a cure will be achieved. During the treatment a special diet is prescribed.

A leper must be precluded from sexual intercourse, and deprived of fatty food; these two rules are *sine qua non*.

Warm springs, says the author, have a most deleterious effect upon lepers, because they elicit the deep seated poison and spread it over the skin. Some persons appear to become leprous in consequence of alcoholism; but this is only an appearance. A mild case of leprosy might be mistaken for syphilis. Therefore be careful of diagnosis before using the needles. The season most favorable for acupuncture is from the beginning of summer to the first days of autumn, because the chances of catching cold are less.

The author mentions some facts which have seemed to me worthy of reproduction:

In Nara near Kioto, there is a leper village which he has visited (the author made a visit to it in 1777 A.D.), inhabited by many hundred families. He quotes a Chinese doctor who gave it as his opinion that leprosy was transmitted in the sexual act, by the passage of an insect at the time of coition, either from the male to the female body, or *vice versa*;[3] the Chinese physician recommends, in the intercourse between a leper and a healthy person, the interposition of a lotus leaf. He knows, in Southern China, of the existence of a leper village, built by the Government, whose population have to report, under penalties, the appearance of all new cases of the disease. He speaks of leper hospitals, which were built "in times of yore," in order to isolate the lepers. Most of the lepers in China seem to dwell in the wet districts which extend at the foot of the South Mountains. In Japan, not only the southern parts, but all the provinces, are infected. The cities are comparatively free from leprosy, though much afflicted with syphilis. These two antagonistic forces never occupy the same spots; it has been so in Japan for eight hundred to fifteen hundred years. In recent times syphilis became more prevalent in the country, and forthwith leprosy decreased.

After expatiating on these facts the author thinks fit to return to the subject of the cure of leprosy. He mentions now another treatment: The use of turpentine or boiled pinewood. The author thinks that such patients as are able to eschew fat and live cleanly have a good chance to be cured by this method. The remedy was known and used two thousand years ago (quotes a leper anecdote from a Chinese book of philosophical doctrine, "Ho-bo-kushi," written by Kakko).[4] It is mentioned in the "Byo-gen-ron," the Chinese theory of diseases. We find it also in the "Thousand Golden Remedies," the "Sen-kin-ho," written A.D. 618–90, date of book A.D. 640). The method is described in the Chinese "Diet Cure of Diseases," as follows: "Take some pure turpentine, boil it in a clean pan with spring- or rain-water; keep stirring it; when it becomes muddy and bitter pour into cold water. Boil repeatedly until the liquid turns white and loses its bitterness. Dry in the shade; grind into powder, and make it fine. Use it thus: Make a soft boiled rice, mix the turpentine thoroughly with it, and eat freely of it. Eat it until it purges. If the patient feels thirsty let him drink nothing but pure water mixed with the turpentine powder. After ten days' use, vomiting and purgation come on; they are favorable symptoms. Resume the treatment from time to time. Mushrooms, and any plant growing in swampy places must be excluded from the patient's diet, not only during treatment, but forever after."

The pinewood treatment is also referred to in the Chinese history of the Jo River country ("Jo-sui-yen-dan").

Acupuncture in leprosy was certainly used in China under the Ming dynasty, (1368–1644 A.D.). It is mentioned in the "Dan-san" (collection of stories by To-fok).

PERSONAL EXPERIENCES OF THE AUTHOR.

1. A farmer of Aomi, in the province of Sagami; age 30; since about a year ago lost the sensibility of his little finger, and the same became crooked; legs became also anesthetic; boring pains at intervals. Case diagnosed as leprosy. Patient taken into a dark room; camphor illumination; congealed blood appears plainly under the skin. Three-sided acupuncture needles stabbed into several eruption places, without causing pain. Purging during fifteen days, and then again for three days. He passed five insects.

[3] Based, very probably, on the fact that leprosy occurs only at or after the age of puberty.

[4] Kakko wrote A.D. 330, a book entitled, "Chin-yo-ho," (prescriptions behind the elbow). The true meaning of this title is as follows: In mythological times, sages carried charms around the elbows to ward off evil spirits. In theological books, eminent Buddhist clergymen are referred to as priests who have charms around the elbow. It must be observed that the elbow part of the sleeve is the Japanese pocket.

Medicaments ingested during twenty days; re-application of the three-sided needles. A cure was effected.

2. A student, 22 years old, province of Satsuma, contracted three years previously a gonorrhea. One year after its cure the little finger of his right hand became anesthetic; spots appeared on hands and feet and on the face. At last all the fingers of his right hand became crooked. His case was incurable because treatment had not been demanded in time; his hand remained crooked, but the acupunctures could still prevent the falling off of the nose and the droppings of his fingers.

3. A rich man's cousin, aged 25, of Nishioka village, a province of Yamishiro, had been a leper for five years. Half of his eyebrows had fallen; his hands and feet were crooked; spots on face, feet and hands. Loss of feeling in both legs. The author visited this case in the leper village, ten miles from Kioto. He was atrophied, and the white crescents of the nails were absent; he had the usual flashing eyes; the fingers were not crooked much. Although, by the author's rule, the case was incurable, as the patient had not subjected himself to the warm springs treatment, and as he was young and had what the proverb calls, an iron-like heart, the author examined him by camphor light, outlined his spots and applied the needles for three days. He was then purged and passed fourteen worms a foot long. On the same day the fingers became more movable. Spots now appeared on his chest and acupuncture was there applied. For fifteen days after this treatment the wounds discharged pus, then granulated by degrees and healed. The fingers became quite free; the eyebrows and moustache grew again, and he was discharged cured.

4. A soldier of Kumamoto, age 40. Eruptions on upper parts of cheeks, flat and scaly, letting escape a yellow fluid, and spreading gradually all over the face. In spring and summer the fluid flows abundantly; it dries up in winter and turns flaky. These conditions had prevailed for four years. He was a leper. He was cured in sixty days.

5. A curio-dealer, age 38; a drunkard and fish-glutton; very fat, with rosaceous nose. A year before treatment scaly spots had appeared on his face in various shapes, like ringworms. He had lost his eyebrows. Case diagnosed as *wet and heat tropho neuritis*. Under acupuncture treatment he recovered in thirty days.

6. A little boy, son of a pawnbroker, age 8, had an eruption on the back of the neck, four or five spots of the size of a peach-stone. Gradually these spread over the whole body; scaly desquamation; eyebrows and hair of head fell out about one-half; left hand crooked; appetite lost. Case diagnosed as inherited syphilis. In forty days he was cured.

7. Man aged 35; had syphilis three years before. Offensive gland sores in axillæ; eruptions on face and other parts of the body; entire skin affected; eyebrows and moustache entirely gone. Diagnosed as syphilis. After some months, the eyebrows grew, the symptoms disappeared and he was discharged.

8. A man, brothel-keeper, aged 27. When he was a boy, a severe itching was suddenly felt in the little finger of the left hand; he bit it off, and the doctor who was sent for applied a moxa to the wound and stopped the bleeding. The wound healed, but sometime afterwards an eruption appeared on the small toe of the right foot, and the outer edge of both feet became anesthetic. Another eruption on the elbow; comes and goes. He understood now that he was a leper. After many years he became emaciated; his left fingers crook; the nail crescents had disappeared; the soles of the feet ulcerated. For eighteen years these miseries continued. The author thinking him incurable declined to treat him, but finally consented to use the acupuncture, when the patient suddenly died.

Katakara Genshiu mentions another doctor who uses acupuncture, combined with cupping and leeching, Dr. Yoshio, of Nagasaki. It is supposed by our author that this practitioner learned the latter additions from the Dutch barbarians. After puncturing with the needles he pours wine into the sores, or uses a leech to suck the blood. Genshiu mentions that cupping and leeching is also used in China.

The book closes with some curious remarks on a certain brilliant complexion which indicates the presence of yet unmanifested leper poison in the body.

LONGEVITY.

Read before the Tennessee State Medical Society, April 10, 1894.

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The subject of the paper I bring before you is longevity; a subject that has been a fruitful and profoundly interesting theme of discussion, not only in our profession, but among thinkers and students in every department of knowledge and in every age. Even the comparatively unlettered masses of mankind have not permitted it to pass their observation without their quota of crude, confusing and altogether irreconcilable opinions and conjectures. There seems to be a peculiar fascination attaching to it, that instinctively challenges attention and stimulates mental activity until our faculties are not satisfied without, at least, a voyage of discovery. Like everything in existence, the deeper it is immersed in mystery, the greater our curiosity to solve it, or, at least, to make the effort, and to satisfy ourselves whether or not it may be a new departure in the course of human events, or a piece of charlatanry utterly unworthy the valuable time and precious thought spent upon it. If it is governed by any specific law, that law is as yet undiscovered. If it is subject to any particular regimen, that also, remains hidden.

Is it not surprising that, notwithstanding all that has been written on the subject of longevity, so little is really known of the causes and conditions of long life? Statistics show that a majority of those living to be more than one hundred years old are women. Sir G. C. Lewis, who carefully investigated this subject positively denied that any *man* ever reached a hundred years, though he was nearly convinced that there were in his day some authentic cases of *female* centenarianism. His argument for his position, was that since the Christian era, no person of royal or noble birth was ever alleged to have reached that magic limit. The lives of the centenarians swell or diminish in length as we advance or recede from prehistoric times. If it be argued that men in high official positions are exposed to greater dangers and more exhausting labors than other men; that the cares of state, the fierce contentions of politics, the brainwork incident to tangled affairs cut short their

days, it may be urged on the other hand, that the higher the station the better the medical attendance, the food, air, clothing and all other conditions on which health and longevity are supposed to depend. It must be admitted that the higher a man's rank, the greater is the chance of accuracy in respect to dates; and that if in all the cases which can be easily attested, centenarianism has been found to be a myth, then there is a strong presumption against the obscure centenarians who grow up in places where the system of registration is unknown, and where skepticism is less common than credulity and love for the marvelous. The presumption, however, is liable to be rebutted by facts; and we think they exist in sufficient abundance, not only to overthrow it, but to prove centenarianism beyond a doubt. Flourens was of the opinion that thirty years is the age of man's maturity and that it marks one-third of his life.

We are justified in saying man has a normal life of ninety to one hundred years, and that by reason of strength he may reach one hundred and ten years. The Biblical expression: "His days shall be one hundred and twenty years," has been thought to mean that this should be the extreme duration of life; others think it meant the average. Judging of the subsequent facts the latter appears to be the correct interpretation. Abraham lived one hundred and sixty-five years. Joshua one hundred and ten. An inscription on an Egyptian monument states the extreme duration of life in that country to be one hundred and ten years. This was the age of Joseph. In the time of David a man of eighty was considered very old. The great prophet king himself, reached only seventy-five years. In the ninetieth Psalm, tenth verse, it is said: "The days of our years are three-score years and ten, and if by reason of strength they be four-score years, yet is their strength labor and sorrow, for it is soon cut off and we fly away."

Seventy in the Middle Ages, was considered a great age, which few attained, but it is a fact that in modern times the average is greatly increased. But if normal longevity is thus established what does science teach as to possible longevity? To what period may exceptional lives extend? May not individuals be endowed with matter of life so largely and have so slight expenditure, that life may be extended far beyond the limits now fixed by various writers? Is one hundred years the extreme limit of human life, and may we not, under favoring conditions, extend life to variable periods much beyond one hundred years? In the patriarchal age man led a natural life. He lived principally out of doors and took moderate exercise. The tax upon his nervous system was moderate, his food was simple and nourishing, and his digestion consequently good. Accident and old age were then the principal causes of death. At the age of seventy-five, Abraham migrated with all of his possessions. Isaac was born when his father was one hundred and his mother ninety years of age. Abraham was over one hundred and twenty years when he bore the great trial of his faith. Jacob lived one hundred and forty-seven years, notwithstanding his troubles.

To go back to the Romans, Pliny states from the record of a census taken during the reign of Vespasian that there were living in the year 76 in Italy, in a certain district, one hundred and twenty-four persons who had attained the age of one hundred years and upward. Haller, long ago declared that over eleven hundred persons had been known to have lived to various ages, between one hundred and one hundred and sixty-nine years.

Thomas Bailey's book, "Records of Longevity," published in 1857, contains the names of about four thousand centenarians, and Dr. Van Owen has collected notices of six thousand, two hundred and two. Of the latter we have the names, country, conditions and date of ninety-nine, who reached the age of one hundred and thirty; of thirty-seven, who lived to be one hundred and forty; of eleven who reached one hundred and fifty; of seventeen who exceeded a century and a half. Lord Bacon says that the Countess of Desmond lived one hundred and forty years and cut three sets of teeth. Allen's "American Biographical Dictionary" gives the names of more than two thousand centenarians; among them are Abraham Bogart, who died in Tennessee in 1833 at the age of one hundred and eighteen, and Francis Age who died in Pennsylvania in 1767, aged one hundred and thirty-four. Judge Basil Hamilton, of Kalamazoo, Mich., who died a few years ago aged one hundred and three, was one of a family of twenty-three children, and he himself, had seventeen of his own. Dr. Archer Atkinson in the *Virginia Medical Monthly* for February, 1894, in an article on longevity, says that Lucy Kennon, of Kentucky, was still living in 1876 and aged one hundred and twenty-three years; that Rosetta Washington, of Louisville, Ky., aged one hundred and twenty-one years was still living in 1888. Stephen Goodale, of York, Maine, died ten years ago aged one hundred and eighteen. Antoine Save, a native of Normandy, lived to be one hundred and thirty years. Joseph Crele, of Wisconsin, died aged one hundred and forty years. Samuel Stocker, born near Clarksville, Tenn., February, 1783, is now living in good health at Toledo, Ohio. George Foster, colored, died in Chattanooga April 17, 1892, aged one hundred and twelve years. Catherine Patton, colored, is now living in New York city, aged one hundred and eight, and has two daughters living, aged respectively seventy-four and seventy years.

Without considering further the arguments brought forward to establish normal and possible longevity, we may state it as a truth accepted by scientific men that man can, to a great extent, control both. The above cases taken together, however incredible some of them may be, seem conclusive. Granting that many of them are open to suspicion, yet after the utmost allowance has been made for errors, misstatements, and wilful exaggerations, enough still remains to establish the truth of ultra-longevity beyond all rational doubt. It is so generally admitted that the duration of life has increased during the present century as to call for no proof. But what are the conditions of long life, so far as can be gathered from the known cases? Happy and calm will be the sleep of those, who on their pillow, can muse on the consolations of the Gospel, and resign themselves implicitly and without wavering into the keeping of a Heavenly Protector and Father. Arbuthnot said: "The instances of longevity are chiefly among the abstemious;" "More men dig their graves with their teeth than with the spade."

Are agricultural districts more favorable than manufacturing, the fresh open country than the crowded

city, mild climates than those whose skies are perpetually scowling? Statistics, well authenticated reports on sickness and mortality say rural districts have, at most, the advantage of one in two hundred deaths above city districts and one in five hundred above the town. Against the overcrowding, the bad air, excitement, and the liability to accident in the cities, are set the better water, the greater variety of food, the better knowledge of the laws of health, the more accessible and skilful medical aid, so that the advantages and disadvantages are nearly balanced. The dweller by the sea naturally selects the mountain for his diversion in the summer, and the mountaineer in turn goes to the seacoast and comes home again in the autumn as to a haven of rest; or if he must labor it is with something like glee that he rejoins his work. After all, we are constrained to say: "There is no place like home." Hot climates have no superiority over cold; China is no more unhealthy than Norway, Iceland or Greenland. Is exercise a vital condition of longevity? Some have said not, in view of the fact that a vicar, cited by the London *Quarterly Review*, Rev. Wm. Davies, reached one hundred and five, though his only exercise for the last thirty-five years was to slip one foot before the other from room to room. Men have lived a hundred years and upward, who only taxed their physical powers to walk one hundred yards a day from house to office and back. Some of the strongest constitutions have been possessed by old soakers. Daniel Bull McCarthy, of Ireland, who drank freely of undiluted rum and brandy during the last seventy years of his life, died in 1752, aged one hundred and eleven. George Kirton, of Yorkshire, a hard drinker, lived to be one hundred and twenty years old. But these are only exceptional cases.

Is a proper diet a *sine qua non* of longevity? All writers on health denounce newly made bread and especially hot bread, and not a few denounce tea and coffee, but, can not each of us call to mind the names of very old people who have been for the greater portions of their lives free users of the same? Shall we declare in favor of frequent bathing or personal cleanliness? Animals get rid of the outer layer of skin in some way. In some species, certain reptiles for example, the outer skin is shed entire at certain seasons. Birds cast their feathers and fish their scales; and at each casting off of his kind, the vital processes are afterwards carried on with more energy, because the drains and sluice-ways of the surface are not blocked up at their mouths by broken down epidermis; so in man, the skin is removed; only the process in a state of health is gradual and less startling in its visible signs. What shall we say of "Lady" Lewson, a London widow, who never washed her rooms, nor bathed, and declared that people who bathed were constantly taking cold; but she habitually smeared her face and neck with hog's lard. It is said of the Icelanders, that though they are very uncleanly and suffer much from skin diseases, especially leprosy, their longevity is greater than that of the nations of Europe.

The one great question of sanitary science is to secure to each individual, death from old age. On every hand we witness the prodigal waste of human life. Of the children born, what a vast percentage never see the anniversary of their birth! What a large percentage die under five years of age! And how few, comparatively, reach the age of ten! At twenty the generation has dwindled to an insignificant minority, and at thirty-three to forty-five disappears altogether. The science of life reveals to us the stupendous fact that man is born to health and longevity and that disease is abnormal and death, except from old age, is accidental, and that both are largely controllable by human agencies. We find that physiology teaches that in every tissue and in the corporate whole, there is inherent death.

It is evident, therefore, that the question of longevity is to be determined by estimating, correctly, vital endowment and vital expenditure. In man, the tendency to individuation is strongest and the degree of evolution is the highest. Man being omnivorous, can secure his food from many sources. He can sustain vigorous health on the products of the soil, or the river, or the forest. Nor need he expend his strength unavailingly in search of food, for by his ingenuity he can devise means of securing it with but slight effort. By suitable protection, man may and does husband his native resources and reduce to a minimum the expenditure of his vital forces. Consider also, by what skilful appliances he continues to repair the wastes and inroads of decay or accident upon his bodily organs and functions. It is a fact that the average length of human life has gradually increased in many civilized communities.

In 1665, in London, one twenty-third of the people of that city died, but now the rate of mortality has been reduced to one forty-fifth annually. Is this not proof of man's advance in civilization, which enables him to live with less expenditure of vital force, which leads him to see his own highest welfare in the common effort to promote the advance of sanitary science?

Mr. Mathews says that health is not a condition of long life, and that long life is no more dependent upon health than upon great muscularity. He cites as proof that the Tom Hyers and Heenans, great prize fighters, and heavy weight lifters, who could fell an ox with their fists, were always ailing and rarely lived to be more than fifty or sixty years old; and that Dr. Winship, of Boston, who could lift three thousand pounds, died aged forty-two. The celebrated Galen had a weak and delicate constitution, yet by strict temperance and evenness of temper, lived one hundred and forty years. It is said that his rule in eating was to rise from the table before his appetite was satisfied. Dr. Southy, in the London *Lancet*, ten years ago, said that the three oldest people he ever knew were women, who reached respectively, eighty-nine, ninety-eight, and one hundred years, and were nearly all their lives of infirm health. And thus I might go on and cite numerous other such cases, but this is enough to bring within the scope of this paper.

In spite of all these facts, it is hard to believe that virtuous habits, abstemiousness, exercise and cleanliness do not conduce to longevity. But the one thing that outweighs all other favorable circumstances is what is called, "a certain bodily and mental predisposition to longevity." Sir Thomas Brown wrote: "There are persons who are prefigured unto a long duration." Some persons are born with a genius for long life, but it is a gift which can be cultivated and like any other it may be destroyed. Those who have this inherited gift will commonly reach old age, though they trample on the laws of health; while those who have it not will die comparatively young

in spite of the strictest precaution against disease. How is it that in a race of beings having such a power over its destiny and striving by every means to obtain long life, but three in every thousand dying, reach their pre-ordained longevity? Within one's own observation he sees a vast array of causes abridging life. In his own makeup he sees sickness on a perpetual warfare with his vital forces.

According to the last United States census, nervous and digestive troubles cause nearly one-third of the deaths. Every point of man's system is subject to attack from disease. The earth and air teem with the germs of disease; we eat them and we breathe them. It is believed by both civilized and savage nations that disease is the expression of the Almighty's disapprobation of man's immoral conduct, and granting this to be true, may we not add that it is the penalty inflicted for the disregard of that Biblical precept: "Cleanliness is akin to godliness?" The most destructive diseases are of man's own creation. The principal condition which shortens life is, first, and above all others, the expenditure of vital force, and it is scarcely necessary for me to mention the various ways by which the vital force may be expended. At maturity the passions ripen into full activity and have their full play, and if not held under control they rapidly exhaust the vital strength. Man may yield to all his passions and appetites and perish at maturity or be decrepit at thirty. He may so order his life as to fully and healthfully develop his passions and appetites so that they shall culminate in a prolonged and vigorous old age, and thus leave death as a subject of accident. It is an axiom of enlightened statesmanship, that the great want of any country is, and ever will be, a healthy, robust and long-lived yeomanry. Public health means public wealth, honesty and morality. Our Government can in no way better promote the interests of the people than by diffusing knowledge on these points.

One of the most sensible sayings on the art of longevity that has fallen under my notice, so far as longevity can be considered attainable, was that given by an Italian in his one hundred and sixteenth year. Being asked the secret of his living so long, he replied:

> "When hungry, of the best I eat,
> And dry I keep my feet;
> I screen my head from sun and rain,
> And let few cares perplex my brain."

In these lines, especially the last, we have the quintessence of all the advice that has been or can be given on the subject. The deadliest foe to longevity is excitement. "To live long," said Cicero, "is to live slowly."

The careful stock-raiser shows his faith in heredity by strict examination of the pedigree; and why so well demonstrated a great physiologic truth escapes notice when a human being is concerned instead of a horse, is in the nature of a conundrum to all thoughtful minds. He who lives extensively, who avoids all stimulants, takes light and agreeable exercise, indulges no exhausting passions, feeds his mind and heart with no exciting material, has no debilitating pleasures, "keeps his accounts with God and man daily squared up," is sure if he has a good organism, to spin out his life, barring accidents, to the longest possible limit.

The poet, William Cullen Bryant, when asked the secret of his health and vigor at upwards of eighty, answered: "It is all summed up in one word, *moderation*." The ancients laid much stress on gastronomy, as many idioms in all languages attest. "Heaven sends the food, but the devil sends the cook," is an old saw that is more forcible than elegant. How many a young man squanders on a holiday or an evening's entertainment an amount of nervous energy which he will bitterly feel the want of when he is fifty. It is true that overwork of the eye at fourteen may necessitate spectacles at forty instead of at sixty. Even warm affections are prejudicial; they subject the owner to constant anxiety, and are as unnerving as the excitement produced by politics or gambling. Nothing is more exhausting than anxiety for a sick wife or child, or nursing a friend through a long sickness, unless you can truthfully say that you take no interest in the result. When a "fine old man" was mentioned in Swift's presence, he exclaimed angrily: "There's no such thing; if his head or heart had been all right they would have worn him out long ago." Wadsworth at eighty, complained:

> "Oh, but the good die first
> And we whose hearts are dry as dust,
> Burn to the socket."

Our fine enthusiasms, if they rise into intensity, are costly and lessen the number of moments we have to live. Some years ago a gentleman in England set about ascertaining the causes of the premature deaths of his acquaintances who had been cut off within twelve years. Of forty individuals, he found that twenty had died from excessive mental labor or excitement, and twelve of these were not intellectual laborers, but men of the world. Sydenham tells us that one of the severest fits of gout he ever suffered from, arose from great mental labor, undergone in composing his treatise on that disease.

Providence has appointed the succession of labor and rest by the alternation of day and night, yet how many violate this beneficent law by turning night into day and day into night. They sleep while the sun is shedding his life-giving beams and work amid the deadly influences of the night. Many do not toil at their callings in the night-time, yet imagine that they do a full day's work and afterwards, with impunity, spend half of the night in charitable labor, or in the pursuit of pleasure or knowledge. But nature can not be so cheated. Occasionally she lets an offender escape for forty or fifty years, but she is evermore "shadowing" him and hauling him up at last, inflicts her penalty just when and where he least expects it. It should be remembered that one can walk farther than he can run.

While all excess is injurious, it must not be inferred that hard brain-work apart from other causes tends to shorten life. Mental labor, apart from grief and fears, from forced or voluntary stinting of the body's needed supply of exercise, food or sleep and the mind's supply of social intercourse, rather prolongs life than cuts it short. Even overwork of the brain is probably far less injurious than underwork. Nine-tenths of the students and professional men who are supposed to break down from intense toil, wear themselves out, not by repletion of study, but by a vicious misapplication of their moral, physical or intellectual forces.

Lord Brougham lived eighty-nine years. Lord Lyndhurst wore out at ninety-one. Epimenides, the seventh of the wise men, is said to have lived to one

hundred and eighty-four. Hippocrates reached ninety-nine, Pythagoras reached eighty, and was murdered. Dr. Franklin was eighty-four. Montgomery, the poet, lived to be eighty-two. Sydney Smith lived to seventy-six and Sir Isaac Newton to eighty-five. The Right Hon. William E. Gladstone, who retired from the Premiership of England only a short time ago, was last December, eighty-four years old. Dr. Beard, of New York, in an able paper on the "Longevity of Brainworkers," has proven beyond even the shadow of a doubt that the world's hardest workers, so far from being short-lived, show a very high average of life; a far higher average than the world's drones, and those who had added nothing to its accumulated capital of happiness, knowledge, goodness and truth. It is an established fact that not a few of the long-livers might materially lengthen their days by taking more exercise and sleep, and by economizing more carefully the expenditure of intellectual and moral energy.

It is known by every scholar that mental application is one of the most effective means of relieving bodily pain, and that it is especially fitted to soothe the ruffled spirit and to mitigate the asperity of corroding anxiety and care. Bacon, in his "History of Life and Death," is emphatic in declaring the religious and literary to be among the forms of life most conducive to longevity. "There are," says he, "in religious life, leisure, admiration and contemplation of heavenly things, joys not sensual, noble hopes, wholesome fears, sweet sorrows, continual renovations by observances, penances and expiations, all of which are very powerful to the prolongation of life." There is a popular notion, which has long been deeply rooted, that precocity of intellect is unfavorable to longevity. It has been shown conclusively, that as a rule, a brain of exceptional force is united to a constitution of exceptionally good fiber, and that precocity, so far from being premonitory of early decay and death, is almost a mark of vast undeveloped abilities, and of a prolonged existence crowded with triumphant usefulness.

Three of the most precocious geniuses of their day were Bishop Thirlwall, Lord Macaulay and DeQuincy, yet they lived to the ages respectively of seventy-eight, fifty-nine and seventy-four. Of all the qualities of mind that conduce to longevity, none are more vitally essential than contentment, cheerfulness and hope. Worry kills more men than the most exacting work, whether physical or mental. Legitimate work develops force, while worry checks its development and wastes what already exists. The physician should be engaged to protect the household and individuals from the assaults of disease, to detect and meet the first and very slightest indications of disorder; and thus, we shall certainly see life prolonged.

There is no doubt that long life, if it be virtuously and happily spent, is a blessing most earnestly to be coveted. The mere lapse of years, however, is not life; "knowledge, truth, love, beauty, goodness and faith give vitality to the mechanism of existence." The value of time is purely relative; and if we count it by heart-beats, not by tickings of the clock, or the shadow of the dial; if, "he lives longest," as Baily says, "who knows the most, thinks the wisest, acts the best;" then many who were rich in years have really died young, while others whose lives measured by the calendar, were cut short early, have been rich in life.

Shakespeare, who died at fifty-two, lived ten times as long as poor old Parr who could boast of his one hundred and fifty-two years. Mere old age following an oyster-like existence, during which one has droned away his life in his shell, never buffeting the waves for himself or others is a questionable blessing; but the serene old age which is secured by temperance, sobriety and the conquest of vicious appetites and passions, the long mellow autumn of life, in which are harvested the fruits of years of useful toil, is to be coveted and striven for by all.

"Men deal with life, as children with their play,
Who first misuse, then cast their toys away."

OPHTHALMIA NEONATORUM.

Read before the Cambridge Medical Improvement Society.

BY AUGUSTUS P. CLARKE, A.M., M.D.
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Among the duties and responsibilities which the obstetrician has in large measure to assume, is the treatment of cases of ophthalmia occurring in the newborn. The disease is by no means infrequent; its course and termination have so often resulted unfavorably that public attention has been directed to the consideration of the subject. Perhaps it would not be unsafe to say that upward of 40 per cent. of all cases of total blindness has had its origin in this condition. The affection seems to be caused by acrid or septic discharges from the mother's tissues, coming in contact with the eye of the fetus during its descent or expulsion from the vulvo-vaginal outlet. The stimulus of light to the infant's eyes may be an exciting cause in those cases in which a purulent or gonorrheal infection is present. Sometimes other agencies may lend their influence in exciting inflammation; want of cleanliness, a strumous constitution, exposure to cold, and an insufficient nourishment are factors that may hasten the attack and lead to the dire result. Sometimes only one eye is affected, but in the severer cases the inflammation attacks both eyes. This may be either by the direct contact with the invading bacteria, or by the presence of germs with the lymph current in its course from the vitreous chamber through the sheaths of the vessels of the retina and through the sphenoidal fissure to the cranial cavity. From this point the bacteria may be hastened along between the optic nerve sheaths or coverings to the perichoroidal space of the other eye, and then passing with the current from the interior of the cranium into the subvaginal space of the optic nerve. That such a posterior lymph stream is developed in man as in the lower animals has been deemed by writers as highly probable.[1]

In my own practice I have met with a considerable number of cases of purulent ophthalmia, and in almost every instance I have been able to get either a history of a gonorrheal attack occurring in the mother, or I have been able to obtain evidence to warrant a suspicion of the existence of that condition. Among the more prominent symptoms occurring in the early stages have been a peculiar florid condition of the palpebræ; these have often been agglutinated. The secretion from the inflamed conjunctiva becomes profuse, thick and purulent, some of which is discharged, but more is retained, induc-

[1] Further contribution to the subject of sympathetic ophthalmia by Howard Gifford, M.D., Vol. iii, Ninth International Medical Congress, 1887.

ing distension and edema of the palpebral tissues beneath. In the milder forms, the inflammation is for the most part confined to the conjunctiva of the lids; in the severe forms, however, the inflammation extends beyond the fornix to the conjunctiva bulbi and to that of the caruncula lacrymalis. When the inflammation extends to the ocular portion, infiltration and ulceration of the cornea are liable to take place. In some instances the child appears to suffer but little, while in other instances the local and constitutional symptoms give rise to much fretfulness and really physical disturbance. This is especially so when any attempt is made to separate the eyelids and to remove the purulent exudation which is constantly taking place and which is liable to exercise undue pressure upon the orbicularis muscle, and to cause a permanent eversion and even an ectropium of the upper lids; this feature of the lids was termed by the ancients, lagophthalmia. The exudation often assumes different shades of a greenish or yellowish hue; sometimes the discharge is sanguineous or ichorous, resembling somewhat the gleety exudation of chronic gonorrhea of the urethra.

One of the most marked or characteristic symptoms of gonorrheal cases is the chemosis or the edema of the ocular portion of the conjunctiva. The most careful examination, aided by the use of the wire speculum, does not always reveal the existence of ulceration going on in the marginal or in the central portion of the cornea. A hazy condition of the cornea may continue for some days without exciting the occurrence of ulcerative processes. One of the dangers to be apprehended is the taking place of interstitial deposits and a complete opacity of a portion or of the whole of the cornea. This in the later stages will be characterized by the development over more or less of its entire aspect, of a bluish gray film, the result of a proliferation or of an infiltration of tissues.

Authors speak of minute ulcers forming on the cornea after a hazy condition has taken place, as indicative of gonorrheal infection. Such a condition in young girls I have repeatedly observed without the least history, or even suspicion, of the presence of such a factor. These cases have occurred as the result of catarrhal inflammation or epidemic influences, and have yielded under appropriate treatment without leaving any untoward results; in some cases, if not in the most, when ulceration occurs the marginal portion of the cornea is first attacked; the morbid process extends in a crescentic form toward the central portion. This condition interrupts the nutritive processes of the corneal tissue and causes the loss of its vitality.

Ulceration may be so extensive as to lead to the escape of a portion or of the whole of the aqueous and sometimes of the vitreous humor, and to the collapse of the bulb. In cases in which opacity or ulceration of the eye is only of a limited extent, adhesions may take place between the cornea and the iris; minute points of opacity may form in the capsule of the lens. These conditions may lead to loss or impairment of vision. The corneal tissue may be so affected by ulceration or sloughing that the crystalline lens will escape through the opening or, instead, will become infiltrated with deposits of earthy phosphates which, by impinging on the ciliary processes and the iris, may give rise to severe neuralgia. Occasionally the disease may cause permanent enlargement of the globe. There may be a staphylomatous projection of the cornea or of the sclerotic. The cornea may have been destroyed, leaving only the iris covered by a fibrous or a cicatricial tissue. These unsightly projections, or adventitious masses often become the source of much inconvenience. The child suffers so much from the irritation thus induced that he can not be easily restrained from a constant rubbing of his hands and fists against the protruding or hyperboloid tumor. Sclerotic staphylomata are the result of a gradual increasing distension of the attenuated fibers of the tissues involved; this usually takes place by the excessive accumulation of the aqueous medium. It may result from an iridochoroiditis. Such a condition may lead to an undue development of the vascular tissues which, though exceedingly minute, abound in the normal condition of these structures of the eye. In sclerotic staphyloma the enlarged eyeball has a bluish or a dark leaden color.

The indications for the treatment of ophthalmia are to remove as much as convenient, at short but regular intervals, of the purulent exudation. This may be done by syringing. Prolonged irrigation with antiseptic washes may be resorted to with much advantage. Mr. Edgar Browne[2] uses a half per cent solution of trichlorphenolate of magnesium. This is applied through perforations of fine silver tubing which can be made to penetrate the conjunctival sac. Mr. Jones,[3] of the Liverpool Eye Infirmary, used Panas' solution of biniodid of mercury. This was applied either through Mr. Browne's irrigating lid retractor or through other devices which could be made to pass well into the sac of the conjunctiva. This means of treatment, though affording much relief in cases of ophthalmia and dacryocystitis resulting from the presence of pyogenic cocci, was found to be too severe as a routine treatment for cases of ophthalmia neonatorum. In conducting the treatment for a case of such ophthalmia whether catarrhal, blenorrheal, gonorrheal, phlegmonous or purulent, the important measures to be taken are to remove or to wash away the exudation and to change the tissues and products of secretion from a septic to an aseptic condition, without adding to the morbid process or doing violence to the epithelium and to the structures beneath. In my earlier practice I used, as local applications, acetate of zinc in the proportion of one scruple to four ounces of water; I also used acetate of lead and alum. A solution of nitrate of silver was formerly a favorite remedy in my practice. A solution from four to seven grains to the ounce was used, whether the exudation was purulent or gonorrheal. I have used as high as fifteen grains to the ounce in cases in which the distension of the tissues was marked. McKenzie's solution of bichlorid of mercury has occasionally yielded excellent results. The formula of this collyrium was as follows:

Hydrargyri bichloridi	1 gr.
Ammonia hydrochlorid	6 grs.
Water	16 ozs.

The employment of nitrate of silver in solution as a local application was for a long time much resorted to, especially as a preventive of ophthalmia in the newborn. That renowned obstetrician at Leipzig, Prof. Credé, was always accustomed to advise the

[2] Braithwaite, Vol. c., pp. 204-5.
[3] Op. cit.

use of a 2 per cent. solution; a few drops of the lotion were applied to the eyes as soon as the funis was cut, and the eyes were cleansed from the smegma and the maternal secretion. I can testify from my own personal experience while I was in this great master's clinique during my later student days, with what enthusiasm and minuteness of detail every such procedure of his work was carried out. At the Dresden Clinique[4] for women, thorough irrigation with a solution of perchlorid of mercury was frequently repeated during parturition. As soon as the infant was born, the eyes and parts adjoining were washed with cotton or lint moistened in tepid water. The solution of nitrate of silver was then applied. A similar method of treatment was adopted at the Jessop Hospital for Women, in Sheffield. As a means of prevention of ophthalmia in the newborn this method of treatment for patients in the larger hospitals may prove to be highly efficacious; in private practice, however, such a course as a routine practice may seem unnecessary, except in the cases occurring among the poorest, or among those in whom there may be evidence, or a history, or a suspicion, at least, that the mother's tissues are in an unhealthy condition.

Cases now and then occur, in which the most approved practice fails to afford favorable results. In some cases I have achieved successful results by the employment of the mild chlorid of mercury. This I use freely between the lids after the eyes have been cleansed. Sometimes I have used iodoform instead of the mild chlorid, but this in two instances signally failed me. I have used Panas' solution of biniodid of mercury, and have been highly pleased with the results obtained. When I have found that its free application caused too much smarting or irritation, I have reduced the strength. The best method for employing it is by irrigation. In a case in which ulceration of the cornea had occurred, the patient recovered without impairment of sight. The following is the formula for the solution which I have employed:

Hydrargyri biniodidi	1 part.
Absolute alcohol	400 parts.
Distilled water resterilized	20,000 "

This solution, as will appear, is only a mild collyrium; the liberal use of it will prove, nevertheless, that it is an antiseptic and that it has a due degree of potency for overcoming pyogenic cocci. In those exceptional cases in which ulceration or sloughing of the cornea has taken place with consequent impairment or loss of vision, surgical measures for relief of the irritation or for lessening the deformity will have to be instituted. Certain morbid conditions of the eye may require the removal of the ball, especially for the arrest of disease on account of the occurrence of sympathetic irritation or of other severe disturbing processes. Sclerotic staphyloma, which may be the result of a gradually increasing distension of the fibrous structures through an excessive formation of the aqueous fluid, is not infrequently met with. For the relief of this condition some authors advise total extirpation of the globe. In some few cases I have had recourse to this procedure. In performing such an operation the cataract knife should be passed through the staphyloma in such a manner as to form a flap; this should be seized with a forceps and then be removed by another incision. Should the incision be carried back to the margin of the ciliary region the humors may be expected to escape, and the remaining portion of the bulb will collapse and undergo nodular degeneration.

On Oct. 2, 1893, I was called to see a child aged 10 months who had a large staphyloma of the left eye, caused by a severe attack of gonorrheal ophthalmia. Owing to the loss of sight, the disfigurement and the consequent irritation I at first determined to effect partial if not total extirpation of the ball. The knife, however, was only carried through the corneal projection, and the operation was completed by the second incision; a large amount of aqueous fluid escaped and the eye appeared to be totally collapsed. The application of dressings with iodoform was made to the wound; the operation had the effect of relieving all the local symptoms. On removing the dressing after the fourth day I was pleased to find that the normal humors, which had so long been subjected to the inordinate pressure from the staphylomatous accumulation, were re-forming, and that indications were favorable for complete restoration of the bulbous development. In the operation for this case I was careful that the incision should not be carried through the entire depths of the corneal structure, but only through the anterior basal membrane or lamellæ, the posterior laminæ having, as I then believed, been crowded unduly backward by the excessive accumulation of fluid in the interlamellæ spaces.

On January 19, I operated on the right eye for a slowly developing staphyloma which was causing much local irritation. The incision was made as in the other operation, but the fluid in the areolæ between the basal tissues was not as profuse as in the other eye at the time of the first operation. I, therefore, did not have as favorable opportunity as before of witnessing an apparent restoration of the normal media. The operation, however, proved successful in overcoming the irritation and in lessening the deformity for which the operation was mainly undertaken.

[4] London Lancet, 1891.

TENORRHAPHY BY MEANS OF THE SUTURE Á DISTANCE OF CATGUT, WITH REPORT OF CASE.

Read before the Chicago Pathological Society, April 9, 1894.

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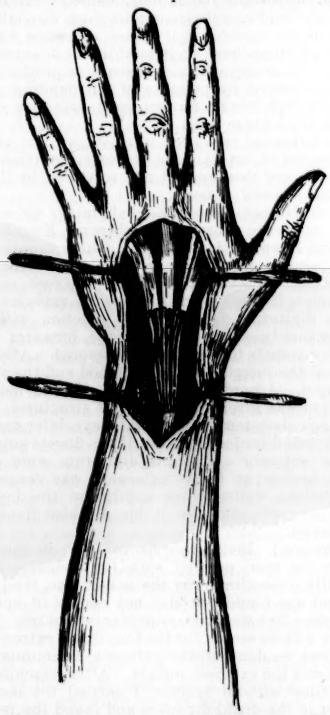
Injuries to tendons and their sheaths is of frequent occurrence, and a perfect knowledge of anatomy and method of repair of these structures for the requisite surgical treatment is of great importance to the practical surgeon. In studying our text-books of surgery, one is struck by the liberal space allotted to fractures; while the subjects of laceration of tendons and treatment are superficially dealt with in a few lines. Although injuries to tendons occur both in hospital and private practice far less often than fractures, this subject should receive comparatively more consideration from authors, both from a pathological and surgical standpoint. It is not in recent cases where tendons are simply divided that surgeons meet with difficulties; but it is in old cases as in ancient fractures, where pathologic conditions have manifested themselves and produce the many

complications which call for difficult surgical intervention. Therefore, before considering the treatment by means of the *suture á distance*, I will comment lightly on the pathology and regeneration of divided tendons. Tendons are composed histologically of connective tissue. The cells are not round, but elongated into fibrils which are firmly bound together and give the appearance of white fibrous cords. They do not possess the quality of elasticity, and the vascular supply is very limited.

Tendons in performing their physiologic function, glide backward and forward; and like other parts of the body which are subject to motion are provided with a means intended to place friction at a mini-



mum, that is, protection and lubrication. The tendon sheath answers these two purposes well. In complete rupture of tendons there is a loss of function and a consequent atrophy; followed later by a degeneration of the extremities to a limited extent. It is a law of nature that where a tissue irrespective of histologic structure or vascular supply, and which has performed a customary amount of work is suddenly put to rest, either through trauma or otherwise, there is always more or less involution of its cells.

However, ruptured tendons differ from nerves in that the two ends only degenerate for about half an inch; while the medulla of the distal portion of a nerve degenerates into a granular mass, devoid of cellular organization. The sheath of Schwann which is composed of connective tissue, alone remaining intact. This difference is most probably due to the different functions performed by the two structures and also to their difference in histology. The one composed of connective tissue whose function is entirely mechanical, namely, that of moving the bone to which it is attached, through the contraction of its muscle; while nerve cells are of a far more highly organized structure, and have vital properties for the transmission of peripheral and central stimuli. The cells of an injured tendon are surrounded by cells of their own kind, as connective tissue is omnipresent in the body and they accommodate themselves according to circumstances by union with surrounding structures; so that no matter how far the tendon ends may have retracted, there will likely be some function performed through contraction of neighboring muscles. On the other hand, the distal end of a nerve, provided collateral-anastomosis is not established, degenerates in the course of several weeks. This deterioration of nerve cells does not take place by reason of a deficient vascular supply, but as a result of loss of function. Cell life, either animal or vegetable, is only maintained when metabolism is in progress; and metal bolism is only performed as long as the cell acts the rôle destined for it by nature. Although tendon tissue is scantily supplied with blood vessels, it differs from cartilage in being endowed with great intrinsic vegetative capacity. This is well demonstrated in tenotomy of the tendo-Achilles for talipes equinus, where the tendon ends are oftentimes widely separated, and no attempt is made by the surgeon to facilitate regeneration by art; but within a short period this great gap is filled in with new tissue from the tendon ends and sheath. Regeneration of tendons, although not given as much individual attention as was given to other structures, nevertheless was made the subject of some experimental investigation. It takes place by the production of embryonal cells from the mature cells of both extremities, and also probably to a lesser degree from the tendon sheath. In injury of tendons there is generally hemorrhage from neighboring blood vessels simultaneously cut or lacerated. This depends upon the anatomic location of the trauma.

M. Saint Germain speaks of a hemorrhage continuing eleven days after subcutaneous division of the tendo-Achilles.

Blood filling up the intervening space between tendon ends, naturally suggested the "organization" theory of Hunter, who maintained that the coagulum became vascular and in time was directly transformed into new tissue. This theory was supported by d'Ammon in 1837, Thierfelder in 1852, and Jobert in 1864; although not without some modifications. While they thought it very probable that blood was gradually merged into tissue, they were positive that it was the active factor in cicatrization. Later Pirogoff, Dembrosky and Volkmann gave insufficient blood extravasation as a cause for incomplete regeneration. Pirogoff asserted that blood between the tendon ends acted like a sequestrum in bone necrosis by stimulating tissue proliferation. Very recently Walter also encouraged this idea by recommending in tenotomy, non-ligature of vessels, in order to produce a clot as devised by Schede in the treatment of bone cavities. The inter-tendinous bloody effusion disappears by absorption about the fifth or sixth

day according to observations of Lebert. Bouvier in 1837 insisted that regeneration was affected by the cellular sheath, which through a process of corrugation and thickening, developed into a tendinous cord.

The blastema theory for a time found many adherents, championed by Henle in Germany, Robin in France and Brodhurst, Adams and Paget in England. This hypothesis was founded on the supposition that protoplasm was spontaneously developed into cells. This reasoning rested on a weak foundation when it came to practical demonstration and was soon exploded. Bizzozero in 1868 already looked upon the principle of this theory in the light of a second rôle. Cohnheim made a step in advance toward the true law of regeneration when he affirmed that leucocytes which had emigrated from the blood vessels surrounding the interval between the two tendon extremities were changed into granulation tissue through their own innate powers. The cellular theory is the last promulgated and has been faithfully defended by Türcher, Donders, Virchow, Remak, Kölliker, Cornil and Ranvier. Regeneration of connective tissue is analogous to regeneration of any other tissue, in that it can only generate from mature cells of its own kind. The blood clot acts in a passive manner by forming a temporary matrix for the immature cells and also in the capacity of an irritant; thus provoking a hyperemia which is favorable to the production of new tissue. The iodoform gauze tampon accomplishes the same effect; only one is artificially produced, while the other is nature's effort to accomplish the same purpose.

After injury there is always more or less para-vascular extravasation of blood; which is not essential for regeneration, but is a great auxiliary. Karyokinetic figures are seen in the cells of the tendon extremities and also in the tendon sheath within forty-eight hours after the trauma, followed by the production of bud-like processes which extend into the blood clot. These are embryonal cells and being of connective tissue origin, are called fibro-blasts. They are round or angular in shape, multi-nucleated and are composed of the elementary matter of all animal and vegetable life, protoplasm. All proliferation is followed by vascularization, that is extension of blood vessels from the neighboring mature tissue into the mass of granulation tissue. Cicatrization next becomes manifest. The embryonal cells after having supported themselves through metabolism for a certain length of time, by their own natural inherent quality evolutionize into mature cells or fixed permanent tissue. The large round or angular cells gradually merge into fibrils. In this metamorphosis each cell draws its neighbor into closer relation; thereby producing cicatricial or scar contraction. In this instance nature again centers her efforts to a good purpose; for by the mechanism of contraction the two tendon extremities are brought nearer toward each other.

The *suture á distance* as a means of establishing communication between ruptured tendons was inaugurated by Gluck in 1884. He operated successfully upon a case where the extensor tendon of the index finger was separated eight centimeters. This mode of suture was studied experimentally by Forgin, Assaki, Jeannel and Van Haecke. Where the divided ends are not too far apart, a plastic operation should always be resorted to; that is the procedure devised by Czerny, of splitting the tendon upon one side for some distance, and turning the divided flap over to its fellow of the opposite side and suture. If the flap does not reach, the other tendon should be treated in the same manner and both flaps united end to end. In cases where approximation can not be secured, the *suture á distance* is the most useful, in fact it is the only operation which can be resorted to under the circumstances. An absorbable suturing material, such as sterilized catgut or kangaroo tendon should be used. The tendon ends are united *á distance* by several sutures in order to make a firm bridge-work. Catgut becomes entirely absorbed by phagocytosis in a short time. The operation meets several important indications, namely: 1, It prevents the tendon ends from retracting through elasticity of the muscle; 2, it forms a passage way for tissue proliferation; 3, it establishes a barrier, by which the embryonal cells secure protection from atrophy, caused by pressure of surrounding parts; 4, the suture being a foreign body, acts as a stimulant to the mature cells.

The following case is of interest, as there was extensive loss of substance of the extensor tendons of the hand, and this was entirely remedied by the absorbable *suture á distance*.

Mr. G. H., young man, English, miner by occupation; residence Northern Michigan. Entered St. Joseph's Hospital Jan. 6, 1894. Three months previously while at work in a mine, he accidentally thrust his wrist against a jagged, sharp rock, making a complete transverse incision of the extensor communis digitorum tendon at its junction with the muscle just below the middle of the fore-arm. The extensor indicis tendon was also severed. After the accident the integument was stitched and the wound bandaged. According to the patient's statement no attention was given to the deeper structures. The dressings were removed several days later and the wound found healed; but the three fingers supplied by the extensor communis digitorum were absolutely useless as far as extension was concerned. The patient waited three months in the hope of again recovering the use of his disabled hand, but to no avail.

Operation: Incision of three inches in the area of the old scar, parallel with the tendons. After carefully dissecting away the scar tissue, the proximal end was found. It did not consist of connective tissue, but was true muscular structure. Then came a tedious search for the four distal extremities, the three tendons of the extensor communis digitorum and the extensor indicis. After searching for some time without success, I carried the incision further in the distal direction and found the tendon ends about two inches above the metacarpo-phalangeal line. The perplexing problem of securing union between the distal ends and the proximal end now presented itself, as the intervening space was four inches in length. Splicing after the method of Czerny could not possibly be practiced here, and under the circumstances, I resorted to multiple *sutures á distance*, as the means of indirect approximation. Medium sized catgut, sterilized according to Bergmann's method was used. I made eight sutures, connecting the extensor communis digitorum and the extensor indicis tendons to the extensor communis digitorum muscle. The external wound was closed with an interrupted row of silkworm sutures and a continued row of catgut. No provision was made

for drainage, as hemostasis had been well effected by ligature and hot water irrigation. The hand was dressed in an extended position upon an anterior splint. The dressing was removed upon the fourth day and the wound presented a favorable appearance, except for a small suppurating focus around one stitch. This suture was removed and after thorough disinfection with a solution of bromin and insertion of a small iodoform gauze tampon, the dressing was re-applied. The wound was irrigated the subsequent three days and I succeeded in aborting a diffuse suppuration, the wound healing intact. The sutures were removed upon the ninth day. On the twelfth day the patient could extend the three fingers upon the splint with slight effort. He speedily recovered the use of his fingers and at the end of a month was discharged from the hospital with function entirely restored. Patient could lift a glass of water to his mouth and even write with perfect ease.

Remarks:—Although I did not have the opportunity of making an examination *in vivo* of the regenerative process which took place, I am satisfied that there was new tendon tissue produced to the extent of over four inches. When the patient made extension, by placing a finger at the muscle extremity, the impulse was perceptible along the whole route of the tendons, showing that there was direct communication. The new fibrous cords when in action would bulge and become prominent to such an extent as to become visible through the skin. These tests were convincing proofs. This case is also of pathologic interest by reason of the sutures uniting muscle with tendon. Muscle cells are endowed with very limited intrinsic vegetative capacity, and do not extend further than an inch from the ruptured end; so that in this case proliferation from the distal extremity was the prime factor in effecting reposition, as connective tissue is the most prolific of all tissues. I wish also to dwell on the importance of making as many sutures as possible in order to construct a canal, thereby securing a line of least resistance for the embryonal cells. If I had secured each tendon with but one suture, I am certain that there would have been very probably an obliteration of the canal by neighboring tissues, and consequent failure of the operation. An interval of four inches is an unusual occurrence. It is seldom that tendons become separated for more than one or two inches at the most; and when united by this method, the operation will yield encouraging results.

RAPID METHOD OF DEMONSTRATING TUBERCLE BACILLI IN SPUTA.

BY JOHN D. KALES, M.D.

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Those who have been engaged in the demonstration of bacteria, and the use of the various methods of staining them, have doubtless been prompted to simplify the technique as much as possible. They can thereby attain a much greater percentage of successful preparations when the work is being done by a large class in the laboratory.

A method that is carried out with ease and success by many students working together in a laboratory, must of necessity possess certain advantages that would favor its adoption by every practitioner who realizes the diagnostic value of detecting tubercle bacilli, and has the necessary optical apparatus.

The writer has for several years stained sputa for tubercle bacilli by a rapid method, one quite generally adopted at present. It consisted in using the cover-glass as if it were a dish, and while holding it with a pair of forceps, the various staining fluids were boiled upon its surface, the cover-glass being held in the smokeless flame of an alcohol lamp or Bunson burner. The usual carbol-fuchsin solution was used, and decolorization accomplished by any of the well-known means, *i. e.*, Orth's solution[1] or nitric acid and water 1–4. If Orth's solution is used, decolorization is slower and seems to yield preparations which have little tendency to fade.

Recently the following method has been found still more convenient. However, in all methods where the flame is applied directly to a cover-glass for the purpose of heating or boiling a staining fluid, there is great need of using only the best quality of glass. This should be very thin, white and well annealed. The whiteness may be determined by looking at the edges of a package of glasses; these should show no greenish tinge. Their brittleness may be estimated by bending one between the fingers; it should stand considerable flexion before breaking. In buying cover-glasses it is necessary to observe these conditions, for a large number that are sold are not fit to use in rapid staining methods where the flame is directly applied.

It is also very important that the forceps used for holding the cover-glass be of the right kind. The best are the curved fixation forceps made for oculists. Their blades are so set that fluids are not drawn between them by capillary attraction. They grasp the cover-glass firmly and may be locked. The teeth are of no use and can be smoothed off with a file.

One should be provided with a saturated alcoholic solution of fuchsin, which is made by adding dry fuchsin to a quantity of alcohol until no more will be dissolved; the excess will settle to the bottom of the fluid and should be allowed to remain there. A pipette bottle is most convenient for this solution, which keeps indefinitely. A 5 per cent. solution of carbolic acid in distilled water should be at hand and is best kept in a pipette bottle also. For decolorizing, a 25 per cent. solution of nitric acid is placed in a wine glass.

Suppose we use a thin, clean and perfectly dry cover-glass of good quality, three-fourths of an inch square, the film of sputum being fixed upon it in the usual manner; then it will be found that twelve drops of the 5 per cent. carbolic acid solution will cover its surface. This is dropped on while the glass is held in the forceps, then with care the fuchsin solution is added, drop by drop. The first two drops make a blood red precipitate in the carbolic acid solution, the third tends to clear this slightly, while the fourth should cause the precipitate to disappear entirely. Thus when twelve drops of the 5 per cent. carbolic acid are used, four drops of fuchsin will be found necessary. Other sizes of cover-glasses will require a different quantity of the stain, though the proportion between the two fluids will be practically maintained as 4–12 or 1–3. Whatever size glass is used it must be completely covered with the carbolic acid solution, and it is well to add a few extra drops. This will prevent evaporation leaving any portion of the glass dry. We may ignore the above proportions

[1] Strong hydrochloric acid, 1 part; alcohol, 30 parts; water, 70 parts.

and always drop the fuchsin until the precipitate that first forms, clears.

Holding the cover-glass in suitable forceps, the staining fluid is boiled upon its surface, but never long enough to dry on the glass. Wash the glass in a stream of running water, still holding it with the forceps, and then wave it back and forth in the decolorizing solution until all color is lost; this may take twenty or thirty seconds. Wash again in running water, dry with the help of blotting paper and heat. If desired, counter stain with cold saturated aqueous solution of methyl blue; if not, invert the dry glass on a drop of glycerin, balsam or water for examination.

The entire process of fixing, staining, decolorizing, etc., may take from two to four minutes, and during this time the glass has been held continuously in the forceps.

There may be conditions when the application of a cold stain for tubercle bacilli—the cover-glass being left in the fluid for twenty-four hours—would be advantageous. The writer has seldom found such conditions necessary. But the above rapid process, which obviates the necessity for keeping on hand staining solutions liable to deteriorate, or obliges one to make up a stock solution whenever there is a suspicion that the one on hand has grown too old, has its advantages.

The overcoming of these difficulties may induce the general practitioner to avail himself more frequently of that method of detecting tuberculosis which has now grown to have a very considerable importance.

AN ABDOMINO-INGUINAL SUPPORTER. FOR USE AFTER HERNIOTOMY.

BY JOHN B. HAMILTON, M.D., LL.D.

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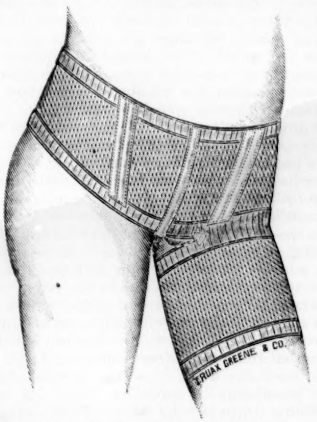
"The patient should not be allowed to get up until three weeks have elapsed after the operation and then only if the wound is sound. The question of a supporting bandage or a truss will then have to be considered."—Treves, "Manual of Operative Surgery," 1892, Vol. 2, page 530.

"A spring truss should not be worn after the operation as its pressure tends to cause premature absorption of the lymph, but the abdominal wall requires a certain amount of support for some months. In infants this may be managed with a skein of Berlin wool as already described; but for children and adults the form of appliance known as Harrison's truss answers best. It consists of a well fitting pelvic band and two short thigh pieces made of linen; like a pair of very short drawers fitting tightly and fastened with lacers; a perineal band prevents its ascending, and may in addition be furnished with a scrotal bag and with braces passing over the shoulders."—Moullin, "Surgery," 2d Ed. by Hamilton, 1894, p. 904.

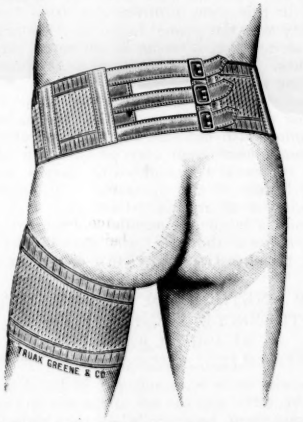
"In all cases during more than six months, those who are subjected to the radical cure should be watched with care and on the first menace of the reappearance of the hernia a bandage must be prescribed, so as not to lose all the benefits of the operation.—Berger, Traité de Chirurgie, Duplay et Reclus, Tome vi.

My experience, now quite extensive, in operations for the radical cure of hernia, has convinced me of the general correctness of the view, that some kind of support is always indicated after herniotomy. The direction given in some of the recent writings on the subject, to cause the patient to wear a light spring truss for some weeks, is only less mischievous than the practice of discharging such patients without any support. In casting about for some apparatus that would approach the shape of the human hand in supporting the new cicatricial tissue closing the inguinal ring, I thought a thin piece of flat sole leather slightly hollowed like the palm of the hand, covered with chamois skin, making uniform pressure on the abdomen, would fulfil the indications. To retain the broad pad in place I caused it to be sewed to a supporter made of silk elastic, with a thigh piece.



The cut shows the supporter as made for me by Truax, Greene & Co.

I have tried it on three cases, and with satisfaction to the patient in all.



With this bandage the pendulous abdomen may be well sustained, and the thigh piece keeps the pad in position. The bandage should be woven in a single piece, and the pad carefully fitted to the patient before permanent fastening. Care should be taken that the thigh piece is not too tight. The straps should be snugly buckled at the back. Patients wearing these supporters have been instructed to remove them at night.

Buena Park, Chicago, April 20, 1894.

ON THE AUTONOMY OF THE HEART.

BY GUIDO BELL, M.D.
INDIANAPOLIS, IND.

In the last number of the *American Journal of Medical Sciences*, Prof. I. M. Da Costa has published eight cases of weak heart, where the causation of neurasthenia and organic disorder, as valvular lesion or fatty degeneration had to be excluded.

He is inclined to attribute this weakness to the influence of the heart ganglia. Notwithstanding, Romberg[1] in compiling the recent experimental researches on the heart, has proven that the animal heart is active by itself and is regulated only by the sympathetic and pneumogastric nerves.

The heart's action never could be fully explained, neither in normal nor abnormal condition by its innervation. There was a supposition that Remak's ganglia promoted the activity of the heart; but embryologic researches revealed the fact that the heart is active before it is reached by these nerve centers, and, furthermore, that these centers spread out only sensory nerve filaments. Then nerve-cells in the heart muscle were looked for, but in vain.

If a man of high repute and large experience does not accept what seems to be an established law theoretically, it is in order to report all pathologic experiences which may be apt to sustain theory.

This is so much more justifiable in a case where a phenomenon can not be explained, except by assumption of what was found theoretically to be the truth.

In an article of the Cincinnati *Lancet-Clinic* of Sept. 19, 1891, I have reported three cases where a peculiar noise of the heart was heard at a distance during the shock. The sound was systolic and appeared not immediately after the injury, but later and stronger, according to the severity of the shock, and lasted until the organism revived and both sounds became audible again.

Both my cases recovered. I could not give a satisfactory explanation at that time, but in a paper read before the Marion County Medical Society in Indianapolis, March 28, 1893, I said that the peculiar noise of the heart heard at a distance during the shock can not be explained, unless the autonomy of the heart is accepted.

The heart meets an undue resistance in the collapsed arteries, and not being restrained by its regulating nerves is working excessively, thereby causing the undulations in the heart region visible through the bed-covers, and the sound audible at a distance of fifteen steps.

I also spoke of the following case: On Jan. 4, 1893, I was called to see John M., at 10 o'clock in the evening. I saw the man, who was 63 years old, half an hour later, lying in a bed without any sign of life.

He was walking the floor after an ordinary day's work, apparently well and in his usual way, when he fell backward without stumbling and lay perfectly motionless. This had happened a short time before 10 o'clock. I found him at 10:30 P.M. with eyes half open, pupils moderately dilated, immovable, lids languid, lips cyanotic, cold skin on face and extremities; temperature in axilla below 95 degrees F.; no respiration; different examinations were made; no pulse at the wrist, but the heart was beating regularly, not much weaker than in life, twenty-one beats in fifteen seconds. I counted the heart's sounds seven times, and also my own pulse which was eighteen beats in fifteen seconds. The man was dead, notwithstanding the beating heart. I injected one one-hundredth grain of nitro-glycerin hypodermatically. A few minutes after 11 o'clock the heart's action became irregular and soon ceased.

These pathologic phenomena fully approve Romberg's statement of the autonomy of the heart.

Austin Flint in his text-book on "Human Physiology" says: "The heart seems to act without any palpable excitation." But if both experimental researches and clinical experiences forward such strong evidence, it seems not to be immodest to formulate Prof. Flint's assertion more positively by saying: "The heart does act without any palpable excitation."

[1] In Berlin klin. Woch., March 27, 1893.

FACIAL ERYSIPELAS—TREATED WITH EXTERNAL APPLICATIONS OF GUAIACOL.

BY CHAS. J. WHALEN, M.D.
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A review of the latest literature on erysipelas reveals, on the whole, a very unsatisfactory state as regards the treatment, and marked discrepancies exist in the writings of different authors on the subject. On this account I wish to place before you some observations based on a personal experience with this disease, treated by the external application of guaiacol.

Etiology.—Dr. J. M. Anders of Pennsylvania, gives elaborate statistics to prove that debilitating diseases greatly predispose to this disease. The primary cause is the streptococcus erysipelatosis discovered by Fehleisen. Jordan is of the opinion that the specificity of Fehleisen's erysipelococcus is questionable, and that its identity with the streptococcus pyogenes is probable. He has studied this subject carefully with reference to this question, and has drawn from his observation the conclusion: That erysipelas is etiologically not a specific disease; that, as a rule, it is caused by the streptococcus pyogenes, but that it may be provoked also by the staphylococcus pyogenes aureus.

These cocci which are so nearly identical with the streptococcus pyogenes, are found chiefly in, and spread along the capillary lymphatics of the skin. Recklinghausen and Lukowsky found them in the lymphatic vessels and connective tissue spaces in the structure affected by erysipelas. Fehleisen found cocci in chains constantly present in bits of skin excised from the spreading edge of an erysipelas rash; they lay in the lymphatics chiefly of the superficial part of the corium, never in blood vessels, and only exceptionally in the connective tissue spaces, or in the immediate vicinity of blood vessels.

Erysipelas spreads along the superficial lymphatics, but not necessarily in the direction of the lymph current, which may be temporarily arrested by blocking of the interior of the lymphatics with cocci. As this microbe is non-motile, its transportation in a direction opposite the lymph current can only occur by reproduction.

In the facial form, when no wound is visible, it is

probable that infection takes place through some small abrasion, though auto-infection may possibly occur, the organism having been previously absorbed through the respiratory or digestive tract. This, however, seems improbable.

As an addition to our knowledge of the effects of guaiacol in the treatment of this disease, I hope that the following may be of interest:

Case 1.—J. E. S., age 30. I saw the patient November 8. He complained of having had tonsillitis two weeks previously, but he had not regained his strength. Three days before I saw him he began to suffer from headache and appeared to have fever in the afternoon. When first seen by me, he was suffering from nausea, headache and constipation. He had a severe chill the preceding day. I found the temperature 103.5 degrees F., pulse 100. I noticed a slight red blush near the lachrymal duct which had every appearance of the beginning facial erysipelas.

I ordered pure guaiacol applied to the affected area and for some distance beyond, in the hope of preventing further extension. The following day the patient claimed that he had experienced instantaneous relief from the application, that his headache shortly afterward disappeared and the fever gradually subsided, so that he was able to sleep for the first time in four nights.

His appearance, however, was much worse than on the preceding day. The rash had spread laterally to the ears, and had extended over the forehead to the border of the scalp. The eyes were completely closed from edema caused by escape of inflammatory exudate into the loose cellular tissue in this region. There was considerable delirium. At 10 A.M. temperature 104 degrees F., pulse 100. Again applied guaiacol with the same satisfaction as before. The nurse found it necessary in this case to make three applications daily for the next four days.

Three hours after the application of the guaiacol, the temperature was 97.5 degrees. At 5 P.M., 100.5 degrees F.

November 11, temperature, 10 A.M., 99 degrees F.; 5 P.M., 100 degrees F.

November 12, temperature, 10 A.M., 98.8 degrees F.; 5 P.M., 99.5 degrees F.

November 13, temperature, 10 A.M., 98.6 degrees F.; 5 P.M., 99 degrees F. Patient discharged cured.

Case 2.—I was called December 16, to see Mrs. S., mother of preceding patient. Had several previous attacks of erysipelas. At the time of my visit she had a temperature of 104.5 degrees F. Complained of intense headache, dry burning skin and constipation. The rash had extended over the entire face, ears and forehead. Bullæ had formed in the ears. I applied the guaiacol as in the preceding case with marked relief of the symptoms. At 1 P.M. temperature 102 degrees F. At 3 P.M. temperature 101 degrees F. At 5 P.M., 103 degrees F. Again painted the face, when the fever gradually receded to 101 degrees F. At 8 P.M., December 17, temperature 101 degrees F., pulse 98. Urine scant and contained albumen. Guaiacol was applied once a day for the four succeeding days.

December 18, temperature 101 degrees F., pulse 96. Albumen still present.

December 19, temperature 100.5 degrees F., pulse 110.

December 20, temperature 100.8 degrees F., pulse 106.

December 21, temperature 99 degrees F., pulse 80. Trace only of albumen found in urine. Patient made a slow recovery.

Case 3.—Mrs. H., age 27; eruption limited to the face. Bullæ had formed on the cheeks; considerable edema about the eyes. Patient was slightly delirious. At 9 A.M., temperature 103 degrees F., pulse 100; ordered pure guaiacol painted over the face. At 12 M., temperature 100 degrees F. At 2 P.M., 99.5 degrees. At 5 P.M., 100.5 degrees. At 8 P.M., 101 degrees, F., when the nurse was obliged to paint the face again. Guaiacol was applied twice a day for the five following days. Temperature ranged from 99.5 to 101.5 degrees F., when convalescence was established. No albumen found in the urine on repeated examinations. Patient was discharged cured on the sixth day.

Another case illustrates even more clearly the good effect of this drug:

I was called February 15 to see Mrs. F., age 40 years. I found that she had an erysipelatous rash covering the entire face, ears and forehead. Bullæ had formed on the cheeks and upper lip. Her temperature was 103 degrees F., pulse 120; dry brown tongue, teeth covered with sordes, bowels constipated; had two chills previous to my visit. Ordered hydrargyri chloridum mite and sodii bicarbonas, aa gr. 5 morning and evening for the bowels; and painted the face with pure guaiacol, from which the patient experienced marked relief. On the following day, at the time of my visit the patient was having a decided chill. I at once applied guaiacol and immediately the chill began growing less intense and within five minutes it entirely ceased. This treatment was repeated on subsequent occasions with the same happy results. Each chill being aborted by the guaiacol applied externally over the affected surface. February 18, patient had been delirious the previous night. Temperature 103 degrees F., was reduced in one hour to 101 degrees F. by guaiacol, applied externally.

February 19, temperature 101 degrees F.

February 20, temperature 98 degrees F.

February 21, temperature 99 degrees F. Convalescence now seemed established and progressed rapidly, much faster than is usual in such cases.

Dr. J. E. Rhodes has kindly permitted me to mention a case similarly treated by him, in which the facial erysipelas followed an intense inflammation of the nasal mucous membrane. The temperature which reached 105.2 degrees F. was promptly reduced. On one occasion profuse perspiration and marked alleviation of the symptoms immediately followed the application. This case ran its course in one week.

The chief points of interest in these cases are:

1. The short time that elapsed between the application and the resulting relief.

2. Repeated trials on the fourth case showed that a chill could be aborted by the external application of guaiacol.

3. Except in cases of extreme irritability of the skin, the application of pure guaiacol does not cause pain. In such cases the guaiacol may be diluted with alcohol, olive or any of the fixed oils to the desired strength.

4. The amount of guaiacol employed varied from 20 to 30 minims.

5. As might be expected, such a powerful effect was not without its drawbacks. In two cases I found a subnormal temperature. These figures suggest their own caution.

The action of guaiacol in controlling chills and fever, as in Case 4, I am inclined to believe is due to an anesthetic action on peripheral nerve endings. Absorption by a skin the seat of inflammatory changes is necessarily slow, and could not account for the immediate fall of temperature noticed in these cases. Experiments have demonstrated that the temperature is not affected in animals if the site of the application is previously anesthetized. Guinard bathed the hind limbs of two rabbits with guaiacol; in one, the sciatic nerve was cut four days before. Here the application caused no fall in temperature, while with the rabbit with nerves intact, the same fall was observed as before.

The same author in the *Province Medicale* for February 17, states: That if the parts are enveloped after the application, in two or three hours guaiacol may be found in the urine; and has drawn the following conclusion from his experiments: That guaiacol can penetrate through the epidermis; that this penetration appears to be the result of an absorption of the vapor; that the envelopment of the painted regions—thus keeping the vapor in contact with the skin—increases the proportion of guaiacol in the urine.

Dr. E. F. Ingals informs me that after my report to

him of the beneficial effects of guaiacol in erysipelas, he applied it in two cases of erysipelatous inflammation of the face associated with rhinitis; and in both cases succeeded in reducing the inflammation speedily.

I have for six months been using guaiacol locally to relieve the dermatitis of the arm, following vaccination, in which I found marked constitutional symptoms. These were generally relieved by one or two applications of 15 or 20 minims.

In regard to its action on the course of the disease, I am not prepared to state positively. In all cases convalescence began not later than the sixth day, although the disease was very extensive in three cases. Albumen was found in the urine of only one patient. Delirium was present in two cases. I am therefore inclined to believe that convalescence was somewhat hastened in all these cases.

After having treated numerous cases by the various methods advocated by different authors, I believe guaiacol to be the most efficient therapeutic agent that we possess at the present time. It is certainly preferable to any of the so-called antipyretics and anodynes usually used to reduce fever or to control pain.

36 Washington Street.

CLINICAL HISTORY OF THE CASE OF PRESIDENT JAMES ABRAM GARFIELD.

BY ROBERT REYBURN, A.M., M.D.

PROFESSOR OF PHYSIOLOGY AND CLINICAL SURGERY MEDICAL DEPARTMENT HOWARD UNIVERSITY, WASHINGTON, D. C., AND ONE OF THE ATTENDING SURGEONS IN THE CASE OF PRESIDENT GARFIELD.

(*Continued from page 582*).

The President was more restless than usual last night being evidently excited by the anticipation of the journey. This morning at 5:30 A.M. his temperature was 99.8; pulse 118; respirations 18.

September 6 at 6 A.M. the President was tenderly lifted by the devoted friends, who had nursed him through his long and weary illness, and in company with his physicians, he was carried on a stretcher to the outer vestibule of the White House. Twice while being carried he waved his hand in recognition to those of his household he was leaving behind. The bed he had just left had preceded him. He was immediately placed upon it without the least apparent discomfort. The President seemingly enjoyed the proceedings until the car was reached. The hour was fortunately too early for any great congregation of people, yet many who had heard of his intended removal were present on the streets. In perfect silence with men guarding the heads of the horses (which by the way, were not attached until the President was safely in the wagon and were detached the moment the car was reached), we slowly wended our way to the waiting train. Twelve soldiers grasped the wheels of the wagon, as the horses were detached, and rolled it to the car containing the bed, to which the President was then transferred without the slightest disturbance. We left Washington with the President at 6:30 A.M. Owing to the admirable arrangements of the Pennsylvania Railroad Company, and to the ingeniously arranged bed designed by Mr. T. N. Ely for the use of the President, he suffered comparatively little and bore the fatigue of the journey remarkably well. During the journey his temperature and pulse were taken occasionally, and the effect was noted of the varying rates of speed upon the comfort of our patient. The minimum of unpleasant motion seemed to be secured when the train was going at the rate of sixty miles per hour. Through that long hot afternoon no sound of bell or steam whistle was heard either from our own, or from the large number of trains we passed. It was indeed a strange and affecting journey, and as we silently sped along it almost seemed as if we were being transported by some invisible and noiseless force to our destination. At every station we were met by silent multitudes, who with uncovered heads greeted us, but spoke not a word. The car assigned for the use of the party contained besides the President, Mrs. and Miss Garfield, Mrs. Rockwell and Miss Rockwell, Mrs. Dr. Edson, Professor Agnew, Dr. Bliss, Surgeon-General Barnes, Dr. Woodward, Dr. Reyburn, General Swaim, Colonel Corbin, Colonel Rockwell, Secretary Brown and the two family servants.

The President seemed to enjoy the rapidity of the motion, and when the train was going at its greatest speed of over sixty miles an hour and he was asked if the motion was uncomfortable, he smiled and said: "Let them go." During the last hour of his journey he showed symptoms of exhaustion, which would have prevented his making any longer journey, had such been required to reach his destination.

The train reached Elberon at 1.09 P.M. A temporary railroad track had been laid from the railroad station at Elberon to the Francklyn Cottage which had been generously placed at the disposal of the President by Mr. Francklyn. On reaching the steep grade near the cottage the cars were detached from the engine and pushed by hand to the side entrance of the cottage, and from thence he was carried to the room in which he passed the remaining days of his life.

September 6, 6:30 P.M. During the last hour of the journey the President complained a good deal of fatigue, and after his arrival was feverish and restless. At present his temperature is 101.6; pulse 124; respirations 18.

September 6, 10:30 P.M. The President is sleeping quietly, and his fever which was evidently due to the exhaustion resulting from his journey, is gradually subsiding.

September 7, 9 A.M. The President slept the greater part of the night, awakening, however, as often as it was necessary to give him nourishment, which he took and relished very well. The fever reported in last night's bulletin had subsided by 11 P.M. This morning his temperature is normal, and he appears to have quite recovered from the fatigue of yesterday's journey. At the morning dressing the parotid abscess was found to be doing well. The visible part of the wound looks somewhat better.

September 7, 9 A.M. Temperature 98.4; pulse 106; respirations 18. September 7, 6 P.M. Temperature 101; pulse 108; respirations 18.

The sight of the ocean seemed to give the President great delight. He said to those about him, "it was refreshing to get where he could look at the sea." The room where he was placed is large and handsomely furnished. When the President was taken into the room he at once noticed that his bed was so situated that he could not look out at the sea. He immediately insisted that a change should be made

Entered according to Act of Congress, May 29, 1893, by ROBERT REYBURN, M.D.

in the furniture of the room, by which he would have an unobstructed view of the ocean, which was accordly done.

September 7, 6 P.M. Notwithstanding the exceptional heat of the weather (the thermometer in his bedroom rose to 94 (F) at half past three this afternoon) there was a breeze most of the day, so that the President was comparatively comfortable. He has taken his nourishment regularly, and has slept well at intervals during the day. At 12:15 P.M. his temperature was 98.4; pulse 114; respirations 18.

September 8, 8:30 A.M. The President was restless and wakeful during the early part of the night, but after midnight slept well until morning. His general condition appears to be more encouraging.

September 8, 9:30 P.M. Temperature 98.7; pulse 104; respirations 18. September 8, 12 M. Temperature 98.4; pulse 94; respirations 17. September 8, 6 P.M. Temperature 99.1; pulse 100; respirations 18.

September 8. The President, desiring to diminish the number of his medical attendants, Surgeon-General Barnes, Dr. Woodward and Dr. Robert Reyburn retired from the case on the evening of September 7. Dr. Bliss remains in charge of the case and the services of Professor Agnew and Professor Hamilton are retained as consulting surgeons. The wear and tear of the attendance upon the President has been perfectly frightful, and was beginning to tell very severely upon all the surgeons who had been on duty in the case. The constant fever of excitement we were under, the continued loss of rest we sustained in our endeavors to do all that we could to save the President's life, had nearly worn us all out. As before mentioned Dr. Bliss never slept a night in his own house from the time the President was shot until his death (except one night when he was compelled to go home on account of an attack of blood-poisoning from a cut received during the dressing of the President's wound). The consulting surgeons were not usually called on for duty at night, unless in case of an emergency; this left the chief burden of the night duty upon Dr. Bliss, and in a less degree upon Dr. Woodward and myself. Dr. Woodward and myself slept alternately one night at the White House and the other night at our homes. The room the surgeons occupied was immediately northeast of the one occupied by the President, and we relieved each other, so that he was never without medical assistance close at hand. During the latter days of the President's illness the weather was extremely sultry and oppressive, and after our broken rest each night, in the morning we could hardly muster energy enough to rise and begin our labors of the day in the President's room. It was the custom of Dr. Bliss to have brought over from his own house early each morning to our room in the White House some excellent coffee. After we had each drank a couple of cups of this strong black coffee, we were able to commence our day's work. It is probably known to most of the profession that all of the surgeons who were on duty in the case of President Garfield are dead except myself. It is my firm conviction that the lives of all these surgeons were materially shortened by their labors in his behalf. Dr. Woodward died a comparatively young man, and every one who knew Dr. Bliss will agree with me in the opinion that he would in all probability be living to-day if he had never taken charge of President Garfield. It was perfectly apparent to all the attending surgeons that the President's life could not be prolonged for more than a few days after the date of his trip to Elberon. There was a perfect unity of sentiment among the surgeons in the feeling that it was our duty to remain and minister to the President as long as he desired our services, at the sacrifice of our health, or even of our lives. When, however, it was deemed best to discontinue our services, it was with a feeling of the most grateful relief that we turned our faces homeward.

September 8. After the arrival of the President at Elberon the following bulletin was issued:

September 8, 6 P.M.

The President's temperature was 98.4; pulse 94; respirations 17. At the evening dressing, 5:30 P.M., his temperature was 99.1; pulse 100; respirations 18. He has taken a liberal amount of food (both solid and liquid) with apparent relish. By special request of the President it has been made our duty to say in this public manner, to Surgeon-General J. K. Barnes, Surgeon J. J. Woodward, and Dr. Robert Reyburn that in dispensing temporarily with their services as his medical attendants he was actuated only by a wish to relieve them from a labor and responsibility, which in his improved condition he could no longer impose upon them. Both the President and Mrs. Garfield desire us to express to these gentlemen personally, and in this public manner our high appreciation of the great skill and discretion which they have constantly exercised as associate counsel in the management of his case up to the present time

(Signed) D. W. BLISS,
FRANK H. HAMILTON.

PRESIDENT GARFIELD'S SOJOURN AT ELBERON.

September 9, 8:30 A.M. During last night the President was restless until after midnight when he fell asleep, and though occasionally awakening for a time, yet he slept a good deal. The conditions of the parotid gland and wound are improving. The enemata and stimulants have been suspended during the past thirty-six hours. On the whole, the past twenty-four hours give evidence of favorable progress.

September 9, 8:30 A.M. Temperature 98.4; pulse 100; respirations 17. September 9, 6 P.M. Temperature 98.8; pulse 100; respirations 18.

A change was made to-day in the watchers upon the President; the four now on duty are Dr. Boynton, General Swaim, Colonel Rockwell and Mr. C. O. Rockwell. Two of these will be on duty each alternate night, and the day watch will be divided into periods of two hours each. The absence of the three surgeons who have been relieved from duty in the President's case is much felt by the remaining three surgeons, who are compelled to sit up with their patient each night, and get what chance sleep they can during the early morning or evening. This morning though cloudy and hazy is comparatively cool and refreshing. A gentle breeze is blowing from the sea, and the day is a decided improvement over the first three or four days of the week. The President's cottage has been rendered comfortable by fires made in the grates, so that no inconvenience will be felt by him should the temperature continue to decrease.

September 9, 1:25 P.M. The President is now sleeping quietly. The thermometer at noon registered 75 degrees (F). He expressed a desire to see this morning any of the members of the Cabinet who wished to call upon him.

September 10, 9 A.M. The President slept a good deal during the night awakening at intervals of one-half to one hour. There is a perceptible increase of strength with an improved condition of the digestive apparatus. The tumefaction of the parotid gland has entirely disappeared, and the suppuration from it has greatly diminished. The wound continues to

improve, and presents a more healthy appearance. He takes a fair amount of nourishment, and seems to digest it well. The surgeons agreed to allow the members of the Cabinet to visit the President, but to limit their stay to a few minutes. Secretaries Windom and Lincoln are to call this evening.

September 10, 9 A.M. Temperature 99.4; pulse 104; respirations 18. September 10, 12 M. Temperature 98.5; pulse 100; respirations 18. September 10, 6 P.M. Temperature 98.7; pulse 100; respirations 18.

The President's condition on the whole is not as favorable as it was yesterday. In the morning his temperature and pulse were higher but they diminished towards evening.

September 11, 8:30 A.M. Temperature 98.8; pulse 104; respirations 19. September 11, 12 M. Temperature 100; pulse 104; respirations 20. September 11, 6 P.M. Temperature 100.6; pulse 110; respirations 20.

The daily febrile rise occurred later than usual last night, and was prolonged over the greater portion of to-day. This was evidently due to a circumscribed area of lobular inflammation of the lower part of the inferior lobe of the right lung. The portion of the lung inflamed is quite limited in extent and the inflammation seems to be stationary, as it has not progressed during the day. The President's expectoration is more muco-purulent, and is rather scanty. No enemata are now given him, as he takes with relish a sufficient supply of both solid and liquid food. The President is bright and cheerful, and perfectly cognizant of all that is going on around him.

Dr. Bliss took his temperature at about 5 P.M. and found it to be a fraction over 100 (F). Dr. Agnew examined the President and said he thought the figures must be wrong, and requested that another test be made. Dr. Bliss replaced the thermometer, and as he did so the President said with a smile: "The figures are too high for you, are they? You wish to get them lower, if possible, I suppose."

In addition to his other food he has taken during the day three tablespoonfuls of brandy in the shape of milk punch. At the evening dressing quite a large slough of connective was removed from the region of the parotid gland.

September 12, 9 A.M. Temperature 98.4; pulse 100; respirations 18. September 12, 12 M. Temperature 99.2; pulse 106; respirations 18. September 12, 5:30 P.M. Temperature 98.6; pulse 100; respirations 18.

The President slept soundly last night from 10 P.M. to 2 A.M. this morning, when he awoke and took some nourishment, and immediately fell asleep and did not awake until 4 A.M. At that hour he was sponged off, and in the course of a few minutes fell asleep again, and did not awake until 7 A.M. at which time he apparently felt quite refreshed and rested. The suppuration from the parotid gland has almost entirely ceased, the openings from which the pus discharged are rapidly healing. The lobular inflammation of the lower portion of the right lung (bronchopneumonia) spoken of yesterday seems to be the result of the parotid inflammation extending by continuity along the mucous membrane of the pharynx, larynx, trachea and bronchi. The cough is less to-day, and the expectoration has materially diminished. The President seems to feel better to-day; he has taken an ample supply of food without discomfort, and has had several refreshing naps. His situation, however, is considered sufficiently grave to cause a postponement by the members of the Cabinet of their proposed trip to the White Mountains. Postmaster-General James goes to New York this morning, but will return this evening.

September 13, 8:30 A.M. Temperature 99.2; pulse 100; respirations 20. September 13, 12 M. Temperature 98.8; pulse 100; respirations 20. September 13, 5:30 P.M. Temperature 98.4; pulse 100; respirations 20.

The President passed a good night, sleeping most of the time. At 10 A.M. this morning the President was lifted from his bed to a reclining chair which he occupied for half an hour. He said: "This is delightful; it is such a change." He was placed in a position commanding a full view of the ocean, and his body raised to an angle of forty-five degrees. During the morning his pulse was irregular, and varied a good deal, but when he became quiet, settled down to the figures of the morning bulletin. The atmosphere is clear to-day, and the weather is cool and refreshing. The President is expectorating a good deal of muco-purulent material, and in his condition of great weakness he becomes much exhausted in his efforts to clear his throat of this tenacious matter. During these paroxysms of coughing his breathing becomes very rapid, and his pulse much accelerated. General and Mrs. Grant were here to-day, and in the evening General Grant spent some time in conversation with the surgeons anxiously inquiring concerning the exact condition of the President.

September 14, 8:30 A.M. Temperature 98.4; pulse 100; respirations 19. September 14, 12 M. Temperature 98.8; pulse 104; respirations 20. September 14, 5:30 P.M. Temperature 99.2; pulse 112; respirations 21.

The President passed a quiet night, sleeping comfortably the greater portion of the night. The day is bright and cheerful, and the President is in good spirits. In addition to the usual nourishment given him he ate a little fruit for breakfast. Soon after the morning dressing Secretary Lincoln was admitted to the sick room. He had not seen the President since the afternoon of the day on which he was shot, and was greatly distressed by his emaciated appearance and exhaustion. Drs. Bliss and Hamilton have decided on account of the great weakness of the President not to transfer him to the invalid chair unless he specially requests it. The President said just now, "that yesterday's experience at the window where he could see the green grass, the soldier walking his beat, the men and women in the summer house and walking along the beach, the fishermen at sea, the vessels on the ocean, and the bathers in the surf made him feel for the first time since he was shot that he was himself again."

Five pustules of acne have appeared upon the back of the President, and were opened to-day. This gave him much relief as they were quite an annoyance to him. September 14, 12:30 P.M. At the urgent request of the President he has been transferred from his bed to the reclining chair and is enjoying the scene very much. The weather continues very pleasant and invigorating, the atmosphere is perfectly transparent excepting over the ocean, where there is a beautifully tinted haze prevailing. After he had comfortably settled down in his chair he expressed

his sense of gratification, and remarked: "This should have been commenced three weeks ago." He remained in his chair about an hour and a half, and slept a portion of the time. He did not seem specially fatigued by the transfer or change of position though he had a slight febrile rise of temperature during the evening.

September 15, 8:30 A.M. Temperature 98.4; pulse 104; respirations 20. September 15, 12 M. Temperature 98.9; pulse 102; respirations 21. September 15, 5:30 P.M. Temperature 99.2; pulse 104; respirations 21.

The President slept until 3 A.M. when he was wakeful for a period of two hours, during which time his pulse rose to 120 per minute, but without the marked elevation of temperature which has characterized the febrile disturbances hitherto. After this time he slept quietly until morning. He had two rigors during the night. He expectorates a good deal, and is considerably exhausted by his paroxysms of coughing. His voice is weaker this morning, but he persists in talking, and thinks he is improving. He shows as much anxiety to know what the daily bulletins say concerning his condition as the general public does, and comments upon them, and discusses his general condition. Dr. Bliss took the 11 A.M. train for New York to-day, and will return at 5 P.M. and be present at the evening dressing of the wound. This is the only time since the President was shot that Dr. Bliss has been absent from his patient for any length of time. Drs. Agnew and Hamilton remained in charge of the President during his absence. Dr. Bliss said on his return: "Mr. President, I have been away for a few hours as you know, but they seemed like an age." He replied, "Doctor, you plainly show the effect of all this care and unrest, and I am glad you were forced to take this temporary relief. Your anxious watching will soon be over."

While the temperature of the President is not high this evening (99.2) yet the increasing frequency of his pulse and respirations, and more than this the excessive exhaustion he displayed, were sure tokens that the end of the weary struggle was near at hand. During the morning he took his liquid food and a small portion of steak. While his mind is usually clear, yet on first awakening from a sound sleep, he wanders a little for a short time.

September 15, 6 P.M. The President has passed the day quietly, sleeping a little, and coughing occasionally, the expectoration being purulent. He was placed on his reclining chair for three-quarters of an hour, and seemed to enjoy it very much.

September 16, 8:30 A.M. Temperature 98.6; pulse 104; respirations 21. September 16, 12 M. Temperature 99.8; pulse 116; respirations 21. September 16, 5:30 P.M. Temperature 98.6; pulse 104; respirations 21.

The President's condition causes a general feeling of despondency. During the past forty-eight hours he has made no favorable progress, and during the last twenty-four hours there has been a perceptible loss of strength. The process of repair in the wound has come to a standstill, and the discharge from it is thin and watery, and is small in quantity. The amount of lung tissue involved is considerably greater than it was forty-eight hours ago, and he is expectorating considerable quantities of purulent material. His attacks of coughing do not recur as frequently as they did a few days ago, but are more severe and exhausting. The febrile rise during last night was not as high as it has usually been lately, but the pulse was quite frequent, at one time reaching 180 per minute. Three small bed-sores which had been previously healed have again made their appearance owing to the President's debilitated condition. His mind is not so clear to-day, and he shows evidences of hallucinations. A slight febrile rise occurred at 11 A.M. which had entirely subsided by 2 P.M. Nourishment and stimulants were given him freely during the day. Owing to the unfavorable news concerning the condition of the President, Postmaster-General James, Secretaries Hunt and Windom with their wives are now on their way from Boston to Elberon.

(*To be continued.*)

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

The Third Annual Meeting Held in Chicago, Sept. 12, 13 and 14, 1893.

AUGUSTIN H. GOELET, M.D., President.

(*Concluded from page 592*).

THE PRIMARY ACTION OF THE GALVANIC CURRENT—IT INCREASES THE AMOUNT OF OZONE IN THE BLOOD AS SHOWN BY CHEMICAL TEST OF THE BLOOD IN THE ARTERIES—WITH OUR THEORY OF ANIMAL ELECTRICITY.

This occurs in the capillaries. Until these are reached the pressure of the oxygen in the plasma restrains the hemoglobin from giving its oxygen. Here in the liquid moistening the fibrillæ of muscle that surround the terminal capillaries where the transfer of oxygen in reality begins, the tension of the oxygen is almost nil, since the tissue elements are steadily taking up the gas from the lymph surrounding them, and the plasma continues to give up oxygen through the walls of the capillaries until the tension falls too low for it to longer do so; then it is that a portion of the oxygen of the hemoglobin is freed and is dissolved in the plasma to take the place of that oxygen which it has given up and which in turn has passed out into the lymph on the other side of the capillary wall. This interchange continues until the pressure of the oxygen in the lymph equals that of the oxygen in the plasma, by which time the venous system of capillaries, the return circulation, has been reached.

One of the strong indications of the action of the galvanic current on the blood is the probability that it facilitates this transfer of oxygen to the tissues in active form, both chemically and physically. By rearranging the atoms of some of the molecules of oxygen in the plasma the volume of the oxygen held in solution is reduced, and the oxygen of the hemoglobin is at once transferred to the plasma instead of being doled out, as it were, to suit the constantly varying pressure changes that go on as the blood completes its circulatory round. This being the case, the transforming process is undoubtedly ushered into existence through the polarizing property of the animal electricity, of which we shall speak further on.

How far chemic change is wrought upon the diffusible solids of the blood by the generation and presence of such an increased amount of ozone we are unable to make precise answer, and we leave it to the thoughtful investigation of those observers who may take interest in our work and who are blessed with a more acute knowledge of physiologic chemistry and a more completely equipped laboratory than it is our good fortune to possess. To our mind there seems little question of the occurrence of just such a change as we have described. Our analyses thus far, have remained within the sphere of quality; it remains for others to continue in the more exact line of quantity. Reasoning by analogy, the galvanic current acts precisely upon the oxygen in solution in the plasma as it did in the jar filled with O_2 through which Schönbein passed the current and observed its transformation into ozone.

There is but one possible action of the ozone on the blood. It must hurry on the transfer of the oxygen to the tissues,

call into existence the oxidation of those constructive elements which the tissues require for their revivification. Doubtless these changes are more extensive than we have been able to determine.

Other Factors to be Considered.

The experiments of Guy-Lassan should teach us a valuable physiologic lesson. From his laboratory we feel that we can carry them over to that storehouse of chemic energy —the human body; and observe changes corresponding to those he observed in his jars filled with gases possessed of great affinity for one another which, however, remained quiescent and inactive until he prodded them with the stimulus of a galvanic current, which, as it passed through the gases, spurred into action, or awakened, as it were, their slumbering affinities, polarized their molecules and ushered into life the new something, the result of the three great potent factors—polarization, chemic action and affinity. We have tried to impress upon you the importance of these three conditions, for upon them depend all the chemico-physiologic changes—in short, all changes that go on within the human body.

We have observed them time and again in the course of our experimenting, and we have subjected them singly and together to the most rigorous test of verification.

Our observations point to the one conclusion, and that is, that chemic action, the feeder of life, can not go on unless there is present an electrical force, an energy that can polarize the molecules of the combining elements and prepare them for combining action. Affinity, catalytic force, the phenomena of contact in themselves are impotent without that ever preceding factor—molecular polarization.

It is the metabolism, the anabolism, the katabolism, the all, and more were it possible, of that cardinal nourisher of tissues, that feeder of life, the blood.

Animal electricity, and the important part it plays, we will reserve for a later chapter, and pass over to general details of our experiments upon the blood of the living animal in its normal state and under the stimulus of the galvanic current.

Preliminary Tests.

For a period of seventy-two hours before entering upon the examinations, we hung in various portions of our laboratory slips of specially prepared paper, saturated with a solution of the iodid of starch, and others moistened with tinct. guiac. These, as we all know, are acknowledged tests upon ozone. We kept the papers under careful observation, examining them in strong light at intervals of an hour, and as there was no evidence of a reaction at the end of the allotted time, we were justified in concluding that the atmosphere of the laboratory was free from ozone and the other gases which act upon starch and guiac. Next we directed our attention to nitrous compounds in the air, for the reason that they—if they exist in the slightest appreciable quantity—give us a reaction very much like that of ozone, and their presence must be excluded in order to give any sensitive test for ozone practical chemic value.

The test we applied for nitrous compounds is an extremely useful one, unusually sensitive, and we give its chemistry for the benefit of those who may desire to repeat our experiments. It is named Gries' test, after its discoverer. He observed that in sulphanilic acid and naphthylamine we have a reagent which acts on nitrous acid, but not on H_2O_2 or O_3. This discovery Gries made while engaged in studying the action of diazo-benzene-sulphonic acid on naphthylamine.

He obtained his diazo-benzene-sulphonic acid by treating sulphanilic acid with nitrous acid, and calls attention to the extreme delicacy of the reaction, minute traces of nitrous acid sufficing to produce a dark red color in the presence of dilute sulphuric acid. The colored substance formed is an amido-azo derivative of the formula[2] $C_4H_3(SO_3H)N=NC_{10}H_6NH_2$ called azo-amido-naphthalene-benzene-sulphonic acid.

Prof. Slosvay,[3] of the Polytechnic School at Buda-Pesth, increases the sensitiveness of the reaction by substituting acetic for sulphuric acid, and he can detect with it nitrous acid in aqueous solution in a dilution of one part nitrous acid to one thousand million parts of water.

The formula of the test is: $C_6H_4NH_2(SO_3H)+C_{10}H_7NH_2+HNO_2=C_6H_4(SO_3H)N=NC_{10}H_6NH_2$ sulphanilic acid and naphthylamine.

2 Ber. d. Chem. Gesell., 12, 426, 15, 2191.

3 Bulletin de la Societé Chemique de Paris, September and November, 1889.

We availed ourselves of Slosvay's modification of Gries' formula.

A tank of a capacity of fifty gallons at a pressure of thirty pounds was filled with air from the laboratory. The air was sent through an air meter which registered one liter per minute, and from this into a test tube containing distilled water, through which it was allowed to bubble for ten minutes and then tested.

There was no immediate reaction, and only after half an hour's standing did we observe a tinge of color; so faint, however, as to be almost imperceptible in ordinary light. In order to see it, we were obliged to back the test tube with pure white filter paper and hold it to the sunlight.

In view of the delicacy of Slosvay's reaction, it was fair to assume that the quantity of nitrous acid in the air was so infinitesimally small that for practical purposes it could have no effect in interfering with the subsequent tests for ozone.

Ten liters of oxygen were treated in the same manner. The oxygen was first subjected to two washings in distilled water without giving any reaction to the nitrous acid test. The remaining forty gallons which were afterwards liberated in the laboratory were washed in caustic soda and dried with sulphuric acid (C P) and bubbled through distilled water. There was no reaction with Gries' test, thus showing that the gas was absolutely pure and free from admixture with nitrous and other gases.

This concluded the preliminary testing. The object of the careful analyzing of the air of the laboratory as you may already divine, was to devise means of testing for ozone in the open, and to avoid the less satisfactory method used by Schmitt, who treated his ozone in a balloon from which the oxygen had been removed as nearly as possible to do so, by means of carbon dioxid, or handling it in a similar glass receiver, from which all air had been exhausted, which was the manner in which Kühne conducted his experiments.

For several days work was suspended and resumed again Monday, August 21. On that morning we were treated to a genuine surprise, that caused us to ponder for a while. Dr. J. C. Dittrich, who, perhaps ranks first among the authorities on ozone in this country, and who kindly assisted us in the chemic portion of our work, prepared several specially sensitive test papers, which, on being moistened with distilled water, at once gave a reaction. The air of the laboratory was evidently charged with ozone, and we were at a loss to account for its presence. Speculation was soon set at rest when we recalled the violent thunder storms of the Sunday and Saturday before.

The ozone was the result of the intense static discharges of those days, and the amount that had been generated by the great Pluvius certainly was enormous and beyond measure. For that day and the three succeeding ones, work had to be deferred, with all the preliminary testing for naught.

On the following Thursday, on resuming operation, no ozone or nitrous acid was detected in the laboratory. The preliminary tests on being repeated gave results as already stated.

Testing for Ozone in the Blood.

A rabbit that had been well fed for a week was the subject of investigation—it was a big animal, in fine spirits, and weighed four pounds three ounces. It was brought into the laboratory, and both carotids cut through and the blood collected in a sterilized glass receiver. In all, sixty grams were extracted and defibrinated with sterilized glass rods. The operation requires nine minutes, and the fresh serum was subjected to test.

The serum was diluted with distilled water, in the proportion of one part of serum to four of water.

With the iodid of starch an immediate reaction was observed in the open air, and the same reaction faint at first, but gradually deepening in blue color, showed under a bell glass.

Testing with guiac. tincture of the officinal strength, which we reduced by adding an equal volume of absolute alcohol, responded more quickly to reaction of ozone. The blue ring around each drop of blood was marked and sharply defined. The same reaction continued when the test was made under the bell glass, and gradually approached its maximum of intensity at the end of half an hour, when, to all appearances, the ozone became completely exhausted.

The fibrinous clot, with the entrapped corpuscles, was likewise tested, and gave a far more distinct and marked reaction than the serum.

It was evident at a glance that the corpuscles contained a far larger amount of ozone than the plasma.

The remainder of the defibrinated blood, about forty grams, which had been kept in a well-covered jar, was next subjected to electrification for five minutes.

A galvanic current of ten volts and fifteen milliampères was sent through the fluid. The electrodes used being strips of platinum an inch long and three-eighths of an inch wide.

In six seconds the meter dropped to eight milliampères, and the registration which was recorded at the end of each minute read as follows:

1	minute	7	milliampères
2	"	5	"
3	"	4.5	"
4	"	3.75	"
5	"	3+	"

Testing with iodid of starch and guiac. tincture showed the unmistakable increase of ozone. The rings around the drops of blood were of a deep blue hue, and the reaction continued with much greater rapidity than was the case with the unelectrified blood. As quantitative test was out of the question, Dr. Dittrich and my colleague made an approximation of the intensity of the action by comparing the rapidly deepening ring of blue with the chromatic scale, given by Dr. Fox, in his exhaustive work on ozone. They carefully noted the change of color as it progressed, availing themselves of the most advantageous light facilities, and agreed upon the estimate that the amount of ozone adequate to such reaction must be in the neighborhood of, at the lowest calculation, at least two and one-half times greater than the amount indicated by the reaction in the case of the unelectrified blood. The clot deposited around the electrode at the positive pole gave a more animated reaction, the ring of blue almost approaching indigo, showing a most marked increase over the former reaction.

Standing by itself this test of the blood outside of the body signifies but little, for it is the blood that circulates through the living organism unimpeded with which we have to deal, and in which physiologic conditions alone can be of any value in the study of the action of the galvanic current. Yet withal, when taken in connection with the tests that were afterwards made, the observations form an important link in the chain of evidence that it is animal electricity which is the polarizer of the atoms of neutral oxygen both in the plasma and in the hemoglobin.

Under normal conditions the transformation of O_2 into O_3 is slow and gradual, and the polarization of the neutral oxygen is proportionate to the polarizing force of the existing animal electricity.

Undoubtedly Schmitt, Houzeau, Meisner, Kühne and others were right in their assumptions, but it seems to us that they did not probe deep enough for a solution of the possible origin of this transformation of neutral oxygen into ozone within the human economy. It was due to the polarization of the atoms of the neutral oxygen, but how did it come about?

We have assumed in starting out upon the experiments the results of which form the title of the paper we have the honor of presenting to your consideration, together with the more exact details which we hope to announce at some future day, step by step, with the view of adding some light to the question, that this generation of ozone admits of a satisfactory scientific explanation.

During the years that my colleague and myself devoted to the study of ozone within the body, we have always regarded it with awe and veneration. We have woven theory after theory only to find that the strands broke precisely within the limits of the reasoning of the great observers to whom we owe all we know of ozone, and that to us as physiologists is indeed little.

That ozone can be found in the blood nourished by gases that contain no ozone is a fact beyond dispute, yet the problem of its generation is a problem that at first sight offers no easy solution.

In looking over the field of possible sources to explain this source of the formation of ozone it fastened itself upon us that one great factor that might afford an explanation had been overlooked. It was animal electricity, and we have tried to explain its function. There seems to be but one deduction to draw from the most careful observation and that is, that it is animal electricity upon which not only the polarization of the atoms of oxygen but all molecular polarization and chemic action in the body depends.

We believe that the transformation of oxygen into ozone within the body is brought about by this very animal electricity, which polarizes the neutral oxygen to such a degree that a portion of the atoms rearrange themselves, attract and repel each other under this polarizing force until we get the ozone which we detect upon analysis. The function of the ozone is apparent to all of us. It gives the oxygen increased power to form combinations with the tissue elements and promotes oxidation.

This polarization of the oxygen seems to take place just as the gas touches the tissues where the conditions are favorable to such an action and where it closes circuit with electricity in the human frame. The unaffected molecules of oxygen under the vigorous spurring of this ozone become vitalized as it were, and at once begin the search for their affinities in the tissues and enter into combination with them.

The proof of this reasoning seems to us to be apparent from the fact that we have been able to appreciably increase the amount of ozone in the blood by passing very weak currents of galvanic electricity through the body, and it is the underlying theory upon which we based our experiments and which we hope to make clear to you.

Before dismissing this portion of our paper and passing over to an account of our experiments upon the blood of the living animal electrified by a current of galvanic electricity, permit us to advance another theory which we regard as justifiable from our findings, and we do so only in the hope that it will give rise to careful discussion, for it is at variance with some of our pet physiologic theories; it is

That oxygen in the blood stimulated by the polarizing power of animal electricity, and more so under the stimulus of the galvanic current enters into combination with the hemoglobin of the corpuscles with a partial transformation into ozone, and that in loosing its combining bonds it undergoes a further partial transformation into ozone.

Experiments on the Electrified Animal.

This brings us to a record of the experiment upon the living animal with the galvanic current.

The animal chosen was also a rabbit, which was prepared by being fed on fresh vegetables for several days. He was in prime condition and was allowed to run at large until he was required for use. The batteries, two of the ordinary twenty-four cell medical machines of the Edison-Lalande pattern were used. The batteries were carefully tested cell by cell and the current measured with both volt and milliampère meter. A coil of a resistance of 400 ohms which had been placed in the circuit was removed after the measurement had been taken and we decided upon a current of a strength not to exceed forty milliampères.

Two cuts about half an inch apart were made into the skin of the animal and into these and for a distance into the body of the muscle, the platinum electrodes used in the previous experiment were inserted and a current of twenty volts turned on. The meter showed forty-four milliampères. This dropped quickly down to forty-one milliampères. The reading of the meter during the five minutes that the current flowed was as follows:

1	minute	40.5	milliampères.
2	"	38.	"
3	"	37.+	"
4	"	35.8	"
5	"	35.—	"

At the end of five minutes both carotids were cut through and thirty-five grams of blood were drawn into a sterilized glass vessel and defibrinated as before with sterilized glass rods.

It was observed that the blood was of a brighter scarlet hue than that which flowed from the arteries of the unelectrified animal. Exposure to the air while the process of defibrination was going on did not affect the bright tint. Defibrination too, was not so easily affected and the fibrin slowly gathered around the rods.

Seven minutes after the blood was shed, a gram of the fresh serum was distilled with two grams of distilled water and subjected to test with both guiac. and starch iodid. The reaction in both instances was almost immediate, a trifle more active with the guiac. The ring of blue around the drops of blood was more pronounced and much deeper and kept on deepening both in the open air and under the bell jar as had been done with the blood from the first animal killed. At the end of twenty minutes the test papers, those saturated with guiac. and starch iodid, three of each variety being exposed to the air and a similar number under bell jars, indicated the termination of the action and they were taken out and carefully compared with the test records of the first experiment which had been preserved in air-tight

tubes. The blue ring was, even upon the most superficial examination, found to be several shades deeper and the ring of reaction more spreading, in some of the drops, almost half an inch wide and distinctly visible to the line of demarkation of chemic action. The fibrin also gave like results. A far larger amount of iodin had been set free in these tests than in the case of the first analysis. The quantity of ozone to give such reaction according to a most conservative calculation of both Dr. Dittrich and my colleague was estimated to be certainly three times greater than that which gave the reaction from the normal blood.

The increase in the amount of ozone was astonishing and far beyond our expectations. We had anticipated some difficulty in determining the increase if it proved to be trifling, but here we were met by a quantity far in excess of what we had hoped to find in the event of the most successful termination of our searching.

The action of the current on the oxygen in both plasma and corpuscle enmeshed fibrin was evident in the transformation of a portion of it into the more vital form of O_3. That the current had accomplished this transformation, astonishing as it proved to be, was readily to be explained, but not so with the ozone in the normal blood. There was but one explanation for this, the polarizing action of the animal electricity.

Our Plain Views Regarding Animal Electricity.

The existence of animal electricity is acknowledged. The origin and action, however, are the points upon which electro-physiologists are not quite clear. Those who have given the subject some consideration dismiss it by establishing its connection between chemic action, heat and animal electricity. They rest content in discussing the three conditions without attaching the slightest importance to the precedence of one or the other of them. Chemic action we are told evolves heat, and so tissue metamorphoses and oxidation go on. They are satisfied with the evidences of the existence of animal electricity, that it can be measured, and that it is one of the great trinity upon which life rests.

It is in view of this condition of the investigations upon this question that we approach it with much trepidation and fear lest we be charged with being too radical in our deductions; we can almost see doubt written upon the faces of many of this distinguished gathering, and we can almost hear you say: "Well, are you going to settle the question?" Settle the question or not, still we have the boldness to advance a probable solution of the problem, and we ask you to follow closely our experimentation and the deductions we have drawn and based our opinion upon.

We will not take up your time by rehearsing the observations of the various electro-physiologists who have enlightened us in animal electricity. To do so we would in fairness to all be obliged to begin with Matteucchi and so on up to the present day, without omitting a single one for each of the observers has welded a link in the chain of result, and to leave out a link would mean to destroy the integrity of the chain.

Let us for a moment consider the observations of Dutrochet, and we may get a clue to the true function of animal electricity. He observed that if the positive pole of a battery be dipped into pure water and the negative in gum water, endosmosis continued more energetically.

Onimus later on discovered that with a reversal of this order of pole, endosmosis too was reversed. It is but fair, reasoning again by analogy, to assume that the electricity in the body exercises precisely the same physico-chemic action. We have already called your attention to the observations of Gay Lassan. Whenever the so-called catalytic action takes place in the living tissue, is it not equally fair to assume that animal electricity is the prime mover? Can there be any question that electricity, galvanic, with its electrolytic powers, the ready manner with which it decomposes the salts, coagulates albumen in the vessels of our laboratories, has a like action on the tissues and fluids of the living organism?

It is apparent, we hold, that animal electricity not only influences the whole system of nutritive operations, but also directs them.

Time and again we have electrified animals and observed that under certain conditions of electrification, the animals threw off a greater amount of urea and carbonic acid than under ordinary conditions.

Urea and carbonic acid! and what is the significance of such an increase in the waste products?

Nothing more than, and nothing short of increased chemic action, increased tissue metamorphosis, the increased evolution of heat; but the electricity, the animal electricity—that remains unaccounted for.

Dutrochet and Onimus showed us the action of the anode and the cathode in endosmosis, and left us to apply it to the physiology of nutrition. Now let us do so and account for the function of animal electricity if we can. As we have already intimated, the order of action is animal electricity first, and why, because we must have polarity before we can have chemic action and its natural result, heat.

Subject a solution of the iodid of potassium to electrification and you free the iodin. Inject a quantity of this fluid into the blood of a living animal and then subject the animal to electrification, and in a very few minutes starch papers held in contact with the parts surrounding the positive pole, will indicate that the iodin is set free by the action of that pole. Note the transfer of the chemic action from the laboratory to the living body; are the two not singularly alike?

Unfortunately we have not been able to isolate the poles of animal electricity, and hence it is that our tests on animals similarly injected, yet not electrified, give us such indistinct reactions, that we hesitate to announce them as positive results.

Yet all this points to the one conclusion, and the one deduction, that animal electricity comes first; that it is the prime factor in all the processes of change, of chemic action, or otherwise, within the living body. That without its stimulus of polarization, no chemic action can be called into life, and consequently none can go on; and tissue metamorphosis, which is life itself, must cease.

Before concluding, allow us a word or two upon ozone, its physiologic and therapeutic value, which are not under discussion, and are hardly properly to be considered in the limits of this paper. We have dealt with ozone generated from the oxygen within the body, and it is in this form that it plays its so important rôle in the oxidation of the tissues. There seems to be some doubt as to the possibility of introducing ozone in its pristine integrity into the system. It may be a feat within the range of possibility, judging from the voluminous literature upon the subject that has been published only within the past year or more, yet from our experience in handling it, we prefer to regard it as an agent that performs its most useful work upon the field where it is ushered into existence, where nature calls it into life because it is needed to perform important duties.

A paper was read by DR. WILLIAM JAMES MORTON on

NOTE ON AN IMPROVEMENT IN INFLUENCE MACHINES, AND ON A NEW TRANSFORMER TO BE USED WITH THESE MACHINES.

The improvements related to important points in mechanical construction and to utilizing Dr. Morton's discoveries for converting statical discharges into currents. There are two directions in which influence machines are of use to physicians; one, the spark and its modifications; the other the Morton currents. The former are familiar to all; the latter exhibit the phenomena of high frequency high potential currents now familiarized by the labors of Tesla, Elihu Thomson and D'Arsonval.

As a result of continued medical work for thirteen years with statical machines, the writer had had constructed by the Galvano-Faradic Company, of New York City, a machine which embodied in his opinion every modern advance. It was fundamentally of the Wimshurst-Holtz type; it had eight revolving plates, each one thirty inches in diameter; it was provided with a simple device, by aid of which the physician could employ at will the spark, spray, static induced and the transformer current. In its present shape the new machine answered every purpose in medicine to which influence machines could be put. It was known as the Morton-Wimshurst-Holtz machine.

Dr. Morton then exhibited the transformer, which consists of two flat spirals of wire placed in an ebonite box containing oil. The static induced current is led into one coil and from the other the current passes to the patient. This current produces a peculiarly vigorous, but painless muscular contraction.

DR. MORTON also read a paper on

NOTES ON MECHANICAL VIBRATIONS ACTUATED BY ELECTRIC MOTORS WITH PRESENTATION OF THE INSTRUMENT.

A helmet was shown, such as was employed by Charcot in the treatment of disease by means of rapid percussion. The vibrations are produced by a small electric motor, called "The Premier," which can be procured almost anywhere at a cost of three or four dollars. By an eccentric action it is made to impart rapid vibrations to the interior of the apparatus.

The mechanical vibration idea dates back to 1734, and the method has been applied to all sorts of instruments. In 1878 experiments were made in vibratory treatment of the limbs of locomotor ataxia patients. Boudet de Paris, Gilles de la Tourette, Mortimer Granville and Allan McLane Hamilton are the best known of the more recent investigators in this field.

The helmet has been used with success in migraine and in insanity. Its action in insanity has been compared to the action of the alternating current passing through the brain. When placed on the head and set in motion, the first feeling is as though the heavy helmet were rising off the head; then the vibratory motion begins to extend to the eyes, nose and lips, and many patients feel a slight numbness creeping into the tips of the fingers. One uniform result of the application of the helmet is an almost immediate disappearance, at least temporarily, of the feeling of fatigue. In a severe case of migraine of twenty-two years' standing, the patient having at the time a severe attack in the left temple, the patient said after a few minutes that she felt as if she had taken nitrous oxide gas, and shortly afterwards she expressed a strong desire to go to sleep. In about fifteen minutes, the excruciating headache had disappeared, and although the pain returned in about half an hour, it was not nearly so severe. In another case of migraine in the midst of the attack, the patient fell asleep and the attack was cured absolutely.

DISCUSSION.

DR. WOOLSEY thought this relief was not due to hypnotism alone, as suggested by some, but to the influence on the spine. He was himself subject to a headache, which would be almost immediately relieved by a short horseback ride.

DR. MASSEY said that an intelligent patient of his who had read of this instrument was very anxious to have it tried on him, because he had noticed that when he had certain peculiar sensations of vertigo a ride in a railroad train would relieve him immediately.

The following paper was read by DR. ENGLEMAN on

FARADISM AS IT WAS AND AS IT IS.—MY NEW APPARATUS, THE RAPID, CONTROLLABLE INTERRUPTOR AND PRECISED NERVE AND MUSCLE COILS.

The induced or interrupted current, as generated by my new apparatus, to which I wish to call the attention of this Association, is a very different agent from Faradism as now in general use; different in range, efficiency and effect, in precision and controllability, and I trust that this apparatus may be for the Faradic current what the milliamperèmeter has been for the galvanic—the basis of progress and development.

I lay stress upon the apparatus because the faradic current, unlike the galvanic, depends altogether upon the generator for its character and efficiency, and the instruments in general use for therapeutic purposes have been such as to yield currents of limited value, without the possibility of varying their character, adapted to certain therapeutic purposes only, and imperfectly so at that; one differing from the other without means of record or comparison, so that even the most ingenious operator could derive but little positive benefit from their use, notwithstanding the satisfactory results *occasionally* achieved. The current was too vague and uncertain to be relied upon as a remedial agent: The attention of the observing practitioner and the scientific investigator was turned to more promising and efficient, more reliable and controllable, forms of electricity, and Faradism was cast aside. The striking results, however rare, which unquestionably followed its use now and then, gave a firm footing and a permanency to this current which Duchenne had so warmly recommended. It has always retained a certain status in the professional mind, which was not easily shaken, and it has been used more or less, usually in a vague way, as a mysterious agent or as a *dernier* resort, far more general than we might suppose, ever since the day of Duchenne, who, almost half a century ago, was far in advance of the general knowledge of Faradism as we find it at the present day. He not only gave us the induction current, but he perfected it as well, and the enthusiasm and perseverance, the physiologic and therapeutic research and experiment of this father of Faradism at once gave a high status to this form of electricity, which was received with favor; but as usual with a new agent, expectations ran too high, they were not realized, disappointment followed, so that the labors of Remak in behalf of galvanism were watched with interest, and his teachings fell upon fertile soil. The interrupted current was displaced, and permanently displaced, by the constant, and ever since the impetus given to galvanism by Apostoli, since this mysterious fluid has been ranged among the controllable and recordable agents, scientific interest in Faradism seems almost to have ceased, but regardless of this the interrupted current continued in popular favor. No champion appeared for the cause, but the induction coil remained, regardless of the changes in the medical profession. Why was this? We may attribute it to some extent to the desire to test this mystic agent where other remedies have failed; to some extent undoubtedly to the good results now and then achieved by its use, results surprising or unexpected at times, and to such isolated successes we must ascribe the survival and persistence of the faradic current, vague as it was, without precision, without the possibility of record or dosage.

Medical science could hardly class so vague and uncertain a force among its remedial agents, no matter what the chance results now and then achieved by its use might be. The excellent work of Tripier seems to have been without tangible results, and even the labors of Duchenne seemed doomed to oblivion. Practically, as I have already stated, far less is generally known at the present day of faradic electricity than was revealed and taught by Duchenne almost half a century ago. Faradism as known to the medical profession, the current as produced by the instruments in general use, was certainly not an agent to which the physician could resort with any positive expectation of success. The objections which were made, and correctly made, to the use of this current were above all its vagueness and uncertainty, not only the total absence of record and dosage, but the radical difference of currents from different instruments, so much so that the current from one might serve to alleviate pain, while this might be aggravated by the current from another. Moreover, there was no certainty of result, no means of comparing results from instruments of the same kind, and even from one and the same instrument; the effect was uncertain, as the current was a variable, constantly changing one. By means of my new apparatus the instrument I wish to describe to you and which is here for the first time presented to the profession since its completion I believe that I have succeeded: (1) in overcoming the existing objections; and (2) in increasing the efficiency and the therapeutic range of Faradism.

The objections which have justly been made against this form of electricity as hitherto known to the profession are obviated by the regular, thoroughly defined, precised and controllable current produced by this apparatus. Not only does this instrument enable us to control and dose the current, so as to render it a serviceable and reliable therapeutic agent, but it also enables us to so vary and modify this agent as to make it a useful and widely applicable one. The therapeutic scope of the current has been extended and new fields have been opened to it, by reason of the great range of current variations which it gives, variations in quantity and quality and in physiologic effect, made possible by the great rapidity of interruption, by changes in the rate of of that interruption and by variation in the character of the coils. These are the factors upon which the therapeutic success of the induction current depends, and which were prominent, but less perfectly developed in the Engleman battery manufactured by Waite & Bartlett for the past —— years, in accordance with the suggestions contained in my first paper before the American Gynecological Society in 1886. In the instrument now before us, in which Dr. Waite has practically carried out my ideas in the most satisfactory manner, great improvements have been made. The apparatus with which I had been experimenting since the fall of 1892, was first demonstrated in March, 1893, in its crude form, at a meeting of the New York Electro-Therapeutic Society, and as it has proven eminently satisfactory, no material changes have been made in the construction of the instrument as now presented, although certain of the mechanical details have been simplified and improved by Mr. Harry Waite, who has assisted me so materially in the solving of the practical problems in the final carrying out of my ideas.

The characteristic features of this apparatus, which give to the current its controllability and extended range are:

1. The use of two motive powers, the separation of the primary flow through the coil from that which propels the interruptor; in other words a separation of the forces which serve to produce the interruptions and the current proper or the inducing flow which gives regularity of interruption with smoothness of current admits of perfect regulation and control of each independent of the other.

2. The interruptor, which is characterized by rapidity and

controllability: *a*, it admits of greater rapidity of interruptions than hitherto known; thus extending the physiologic and therapeutic efficiency of the current, and *b*, the control of these interruptions is perfect, making record and comparison possible.

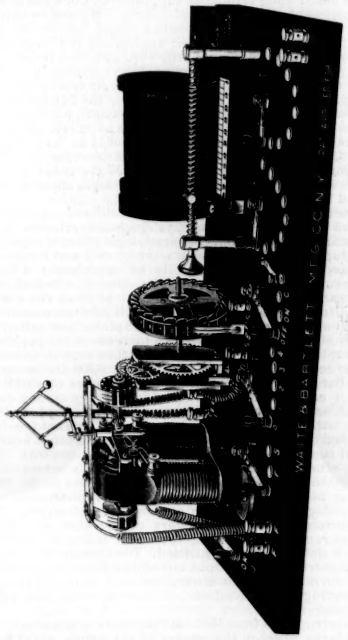
3. The series of secondary coils, varying in the number of winds and the thickness of the wire used, each of known physical and physiologic power, adapted to its special therapeutic purpose, for reduction and stimulation; for effects on nerve and on muscle.

1. *The separation of Coil and interruptor Current*, the use of an independent force for the propulsion of the interruptor and the induction current proper overcomes some of the most important objections to the therapeutic use of the faradic current, by removing all irregularity and allowing of perfect control of each of its essential factors, the rate of interruption and the force of the induction flow proper. In the ordinary medical apparatus the same primary flow acts upon both, so that the resultant therapeutic current is constantly varying. The rapidity of interruption varies with the force of the primary flow, and varies with the position of the secondary coil, which is frequently changed as it is the essential element in determining the intensity of therapeutic effect. The rapidity of interruption with the same arrangement of the vibrator varies, then, not only with the force of the primary current, but with the pushing in or out of the secondary coil, the primary or the core, as the case may be, and the therapeutic or coil current again varies with the rapidity of interruption. Rapid interruption calls for a strong propelling force, so that a mild therapeutic current with rapid interruption can hardly be attained, but it is the constant variation which is the main objection, and by a separation of the forces the necessary regularity and controllability of each is attained. For the new apparatus by this separation of coil and interruptor current the most delicate or the most powerful inducing flow can be utilized with any desired rate of interruption, whether one or one hundred thousand per minute; whether it be the ordinary slow or rapid vibrator with muriate of ammonia cells or the new interruptor propelled by Grenet cell or storage battery.

I believe that I have satisfactorily shown that the rate of vibration is one of the most important factors in determining the therapeutic effect of the induction current, and not merely as it was formerly treated, a mechanical necessity for the production of such currents, and a very secondary part in the apparatus, as it has always been and still is in all faradic instruments for medical use. However, regularity of vibration or interruption is essential to a serviceable therapeutic current, and to obtain this we must not only have an interruptor acting with far greater regularity than the old-time vibrator as ordinarily constructed, but in addition the vibrator must be controlled by a separate force entirely distinct from the coil current, as it is in this apparatus. This separation of forces is essential to satisfactory work, to a simple and reliable controlling of the two most important factors of the therapeutic current. In no other way can precision be obtained, and I trust that erelong the better class of medical instruments will be arranged for a separate and distinct coil and interruptor current. The portable battery for general use, especially for stimulating currents, will probably, on account of the greater simplicity of construction, retain its present form with a single motive power or one primary current, which acts on the vibrator, producing the interruptions, and likewise the induction effects; but the stationary apparatus, from which the various phases of therapeutic currents are to be derived, must have a separate motive power for each, a storage or Edison-Lalande battery for the interruptor and four or, at most six, muriate of ammonia cells for the coil.

2. *Vibrator and Interruptor.*—It is needless at this time as in my earlier papers, to insist upon the therapeutic importance of vibration or alternation, an accepted fact since Mr. Tesla has demonstrated the marvelous mechanical results of rapid vibration, and D'Arsonval has proven the surprising insensibility of the system to currents of extremely rapid alternation. The remarkable results of vibratory action have been sufficiently demonstrated of late, and the varying effects of such vibrations of various mediums upon different nerves are the subject of physiologic and therapeutic experiment. The more varying the effect of different rates of vibration the more important is their perfect control, and this I believe has been achieved in this apparatus. The increased rapidity of interruption and the ability to control it gives a wide scope to the efficiency of the current, increases its sedative power, and renders the application of effective currents possible to the most sensitive tissues, certain results, especially decided vaso-motor effects, being produced by rapidly interrupted currents which are no longer perceptible to the sensory nerves. Whatever be the theory, whether it be true or not that the effect of the faradic current is mainly due to its mechanical influence upon the molecular constitution of the organism, the facts are that this variability, which is the very life and essence of faradic electricity, is likewise one of the most essential factors in determining its therapeutic efficiency. This is readily proven by observing the physiologic effects of the interrupted current. The effects of the slower rates of vibration, the highest obtainable by the spring vibrator,[1] are best demonstrated by the use of mild currents, but as such currents would cease to impress the sensory nerves, and would no longer be recognized by them if interrupted with greater rapidity, stronger currents must be used to test interruptions of greater rapidity.

The physiologic effect of the induction current slowly increases with an increase in the rapidity of interruption up to 2,500 or 3,000 per minute. The increase in the *intensity* of physiologic effect within these limits is not great, and



Engleman Faradic Apparatus, with rapid controllable Interruptor and Alternator.

observable only, as has been stated, in mild currents, hence of no great therapeutic value. The *character* of physiologic and therapeutic effect, however, does vary, so that it behooves us for medical purposes to note approximately, at least, the rate of interruption even within these limits, the limits as given by the spring vibrator, and this serves well as an exact control is unnecessary, unless for experimental pur-

[1] Great vagueness exists as to the rate of vibration of the average vibrator, and as a rule this is overestimated. An ordinary spring may vibrate 2–5,000 times per minute, 40 or 50 per second, and a better instrument at most from 4–6,000 per minute or from 60 to 100 per second; to determine this with precision by tuning fork is possible, but a difficult task for any but the skilled experimenter; the simple determination by the comparison of the note sounded is uncertain and subject to a most variable individual equation as well as other sources of error. My assertions are based on my own older Gaiffe instrument, which does not exceed 3,600, and on the comparison of results from the Waite and Bartlett spring vibrator with those from the controllable interruptor current. Moreover, at the suggestion of Dr. Mount-Bleyer, the lycopodium figures obtained upon the tense membrane by the vibrator and known rates of the new interruptor have been used as means of comparison, and by reference to the results obtained by these three methods the rates of vibration have been determined with approximate certainty.

poses, and this can be obtained by the new interruptor. For ordinary therapeutic purposes the methods of current interruption used in my portable battery may suffice; that is, the single impulse key for very slow interruption; the slow vibrator, which can be regulated so as to give from 100 to 1,500 interruptions per minute, and the rapid vibrator giving from 1,500 to 4,000 or at most 6,000 per minute. High rates of interruption, together with a perfect control of those interruptions, are obtained by the new interruptor, as seen in Fig. 1. The interruptions are obtained from the commutator upon the axle of a small motor propelled by a two-cell storage battery or six Edison-Lalande cells, per minute. We can thus obtain interruptions of known rapidity and perfect regularity, the rapidity being limited by the size of the apparatus only, any desired rate being obtainable. But I believe that the apparatus in its present form, with a limit of 50,000 to the minute, is ample for all therapeutic purposes in connection with the primary and secondary coils as now in use. This is a great change from the ordinary apparatus with the vibrator which averaged from 3,000 to 4,000 per minute, and all statements as to greater rapidity of vibration are based upon erroneous suppositions, not upon scientific experiment. The physiologic results obtained by experiments with interruptions between 50,000 to 100,000 per minute have not warranted their application to therapeutic purposes, so that higher rates still were not even tested; in fact, they would be useless, as such rapidity completely annuls the effect of currents obtained from four to six muriate of ammonia cells and ordinary coils. The higher the number of interruptions the greater is the current strength which is necessary to make an impress upon muscle or nerve, and with higher rapidities all physiologic effect would be lost. Up to 2,500 or 3,000 per minute there is a slight increase of effect both upon motor and sensory nerves. As the rapidity continues to increase the intensity of physiologic effect diminishes and its character changes.

I am not as yet prepared to give the results of my clinical work, and can only refer to physiologic experiment as a guide, bearing in mind that the physiologic effect of rapidity of interruption varies with character of coil and intensity of primary flow. I will merely cite an experiment with a primary current of four muriate of ammonia cells and coil 3 of my earlier apparatus (W. and B.). At 45 of the scale, or one-third of the coil in circuit, this will produce muscular contractions with from 45 to 100 interruptions per minute; this current grows stronger with an increase in the rapidity of interruptions up to 4,000 per minute, then soon decreases. Muscular contraction ceases at 5,000, at 6,500 its sensory effect is barely noticeable, and before a rapidity of 10,000 is reached it ceases to be felt altogether. A very strong current, such as one from No. 3 coil completely overlapping the primary, with an inducing power of four Leclanché cells, and applied through large moist electrodes—in other words, a current too strong for therapeutic applications with the ordinary vibrator at 3,000 per minute, is barely perceptible with 25,000 interruptions per minute, and ceases to be felt altogether at 28,000. The rapidity of interruption controls the physiologic effect of the current as perfectly as the sledge movement of the secondary coil, so that, all other conditions remaining unchanged, it is an index of current strength which may well be utilized. The therapeutic value of rapid interruption rests upon our ability to employ strong, efficient currents without discomfort, and is found in the nerve-quieting, sedative effects of these interruptions with fine coil currents.

Slow interruptions from 100 to 400 per minute are obtained from the large wheel in the center of the figure, which has 24 contacts, any and all of which can be eliminated at will, so as to reduce the number of interruptions in the revolution, and as these contacts are very distinct and clearly numbered, they will serve for the control of the rapidity of the motor and the number of interruptions from the rapid interruptor upon its axle, to the left in the figure, which revolves 210 times as fast; to the right is the alternator. Slow interruptions from 100 to 400 are obtained from the large wheel by moving the switch to the left to "S," and rapid interruptions from the commutator by moving it to "F."

The rapidity of the interruptions obtained from this instrument can be determined with precision by control of the revolutions of the slowly revolving large wheel,[2] which always preserve the same relation to those of the commutator, as 1 to 210; the rate can likewise be determined by the use of the speed indicator and a noting of the propelling current force; hence the rate of interruption is under perfect control, either by observation of the number of revolutions of the slow interruptor or by a noting of the current intensity used after its effect has once been established by comparison with the speed indicator, a given current always producing a given number of revolutions and rate of interruption. Practically, it is the rheostat, (the switch to the right is the rheostatic) which regulates the rate of interruption and when the operator is once familiar with his instrument he can closely approximate the current intensity or rapidity of interruption by the resistance used, *i.e.*, by moving the rheostat switch from point to point.

The general laws governing rapidity of interruption are true of the primary as they are of the secondary or induced current, but in order not to enter upon too wide a field I will not here discuss the interruptions and alterations of the primary faradic which are readily obtained in the new apparatus; and moreover this current has lost in therapeutic significance since instruments are furnished with gravity coils of low electro-motor force, which I prefer to the primary, and which answer perfectly in almost all cases in which the primary coil was supposed to be essential.

3. *Coils.*—As physiologic effect depends upon resistance, diameter of wire, or current quantity and electro-motive force of the current, as determined by the number of winds in the secondary coil, I have devised a series of coils of known quantity and electro-motive force, so that each coil may determine a certain physiologic effect, and I believe that I have now at least approximated the physiologic and therapeutic extremes, since these coils have been developed after prolonged experiment and the winding of coil upon coil in accordance with theoretical reasoning and results previously achieved: The coils now determined upon represent certain forces and produce certain physiologic and therapeutic effects, motor and sensory, sedative and stimulating. Motor, to the exclusion of sensory effects, the painless influencing of the muscle, are most satisfactorily obtained by secondary coils of the lowest possible resistance with the largest possible electro-motive force, within certain limits, and within certain limits the efficiency of the muscle contracting current is increased by increased ampèrage, without any pain or sensory effect; this is proven by my coils notwithstanding theoretical statements to the contrary. Nerve effects, on the contrary, are most effectually produced by coils of higher electro-motive force, increased voltage with diminished ampèrage; counter-irritation, stimulation and painful effect upon the nerve by the greatest possible electro-motive force in short coils; the sedative, nerve-quieting effect by long coils of great electro-motive force, high voltage and low ampèrage. General nerve and muscle effects vary in character with resistance of electrode and rapidity of interruption by coils of moderately high electro-motive force and resistance. The various effects desired, calling for certain quantity and quality of current, can be satisfactorily obtained from individual coils only, quantity being necessary for action upon the mind direct, and electro-motive force for the influencing of the nerve; the endeavor to combine a variety of effects in one and the same coil is possible only to a limited extent, and perfect results can be obtained only from a continuous coil or its inner sections, and a variety of such coils is necessary if definite results are to be achieved.

The coils used in connection with the apparatus are:

A—For Motor Effects.

1. Coil I of the old series, the heavy wire coil, 0.8 ohms resistance, 528 winds, as high a voltage as is well possible, is a simple coil with considerable ampèrage.

2. Multiple coil of 32 wire, 6,500 winds, 4.1 ohms resistance, which gives even more efficient and entirely painless muscle contraction, by reason of the comparatively great ampèrage with high voltage.

B—For Stimulation and Counter-Irritation.

3. Coil II of the old series, 13 ohms resistance, 1751 winds, with penetrating and rather irritating effect, the current being a more painful one as ampèrage lessens and voltage is still moderate, comparative low.

4. Short fine coil, 40 wire, 180 ohms resistance, 528 winds, giving an extremely painful current without motor effects of any kind. An unusual relation of ampèrage to voltage, ampèrage is much less than in the previous case and voltage also lower. Comparing this with Coil I, same voltage, 528 winds, we see that high ampèrage, 0.8 ohms resistance gives effective and painless muscle contraction, whilst very low ampèrage, 180 ohms resistance causes great pain and no contraction comparatively.

[2] An improvement is now being made by Mr. Waite which admits of the direct count.

C.—General Nerve and Muscle Effects.

5. A coil of 32 wire, 7500 ohms resistance, 4500 feet, tapped at 3000 feet 500 ohms, 1500 feet 250 ohms.

D.—Sedative Effects.

6. Coil of 6,000 feet, 12,890 winds, 2,484 ohms resistance, tapped at 4,000 feet 9,685 winds, 1,656 ohms 2,000 feet 5,670 winds 828 ohms. This coil gives the most satisfactory sedative effect, acting rather upon the sensory nerves to the exclusion of the muscle, as far as this is possible, the first or 5670 winds section, with more ampèrage being still serviceable for certain muscle effects; the full coil of 12,890 winds represent the extremes which can be used to advantage even for sedative purposes, 10,000 or 11,000 winds being almost sufficient. The coil has, however, been retained as it may in some cases yield results which could not be attained by lower electro-motive force, but higher voltage, more winds, are not only useless, but even less efficient with the battery force and primary coil; as now made the higher voltage with lowest ampèrage affects the muscles least.

These coils represent definite physiologic and therapeutic effects as far as it is possible for this one factor to do: to develop the utmost possible current effect a combination of the various determining factors is necessary. The full effect of the motor coil is obtained by slow current interruption and the moist electrode, which reduces resistance to a minimum, giving the greatest possible current quantity; it thus gives an efficient muscle current without the greatest possible increase of ampèrage possible with the given voltage yields the most efficient and painless muscle current effect upon the sensory nerves. The irritating effect of the short, fine Coil 4, is developed to its fullest extent by an increase of resistance, or diminution of ampèrage, by the use of the dry metallic electrode and interruptions of moderate rapidity, whilst the sedative effect of Coil 6, with the highest possible electro-motive force, is developed by rapidity of interruption and increase of penetration by the moist electrode. Only by a combination of all the essential factors can the most perfect results be obtained, and it is readily seen how the physiologic effect may be varied by a variation in any one of these factors, especially by a variation of each one in the same sense.

A farther variation of the current is obtained by the rheostat, the switch to the right, which controls the coil current, varying its intensity without changing the relation of primary and secondary coil; the other rheostat controls the interruptor current and thus the rapidity of interruption or alternation.

In conclusion, let me again emphasize what I deem the essential features of the new apparatus, they are:

1. The separation of motive powers, an independent coil and interruptor current.

2. The precision and variation of secondary coils and current.

3. The rapidity, regularity and controllability of interruption; though rapid interruptions have been attempted by various means, they have never been practically controlled; thus the singing or ribbon vibrator, which is difficult to adjust and calls for a strong motive power, which means a powerful coil current; and while its vibrations can be varied to some extent, this variation of vibration is obtained only by a variation of coil current, and is within extremely uncertain limits. The regularity of interruption obtained by the revolutions of the commutator is perfect while every rheotome or vibrator varies constantly, almost with each of the ever-changing factors of a therapeutic application. The importance of a perfect control of the rate of interruption such as is possible in this apparatus is evident, and that rate of interruption can be determined positively at any moment, while the determination of the vibrations of the rheotome, possible only by comparison with delicately constructed tuning forks, is simply out of the question in the physician's office during therapeutic applications. The construction of the coils for the development of currents of known physiologic and therapeutic value is an equally important feature of this instrument; it is the noting of quantity or resistance and electro-motive force or number of winds of these coils, which enables the operator to indicate with precision the current quantity and quality, and it is this possibility of determining with precision each of the elements upon which therapeutic effect depends that a positive value is given to this agent, record and dosage is made possible, and upon this we must depend, as absolute measurement is of no therapeutic value. This I can now positively say since I have for some time measured therapeutic and experimental currents, and find that such physical measure is no indication of physiologic effect, as will be readily seen if we consider merely this one fact: That the same current slowly interrupted may produce a powerful effect upon motor and sensory nerves, and when rapidly interrupted it is not perceived by either, yet physical measurement remains the same.

The interruptor which was devised in connection with this apparatus will serve other therapeutic purposes; being acted upon by its own individual motive power it may be used as a separate instrument for the purpose of interrupting or alternating the primary faradic or the galvanic current; and it may likewise be used for the purpose of producing atmospheric vibrations, by means of the telephone receiver or other vibrator, vibrations which will prove useful for various therapeutic purposes. One of the results of such independent use of the interruptor has been the muscle contracting current which is obtained by a combination of the galvanic and faradic apparatus, the mixed or high voltage primary current,[3] as I have termed it, which acts powerfully upon the fiber, and may be used to contract the muscle in cases where the faradic proper has failed.

While the striking physiologic effects produced by the new currents warrant us to expect valuable therapeutic results I will merely say that I have been more than gratified by what has been so far accomplished by muscular contraction or interstitial massage in the painless stimulation of relaxed pelvic tissues by the muscle coil, the counter-irritation produced by the short, fine, wire coil, and above all, the sedative effects of the long fine coil, even with interruptions of moderate rapidity. Without entering into details, I will only say that the instantaneous relief obtained from the application of such currents in acute inflammatory pain has been surprising and warrants the highest expectations.

DISCUSSION.

Dr. Massey said that there was still another objection to the ordinary coils, and that was the rapid oxidation of the contact points on the interruptor. A very few passages of the current suffices to oxidize these.

Dr. Herdman said that the new apparatus was simple and efficient, and it not only gave very rapid interruptions, but the number of these could be very readily determined at any particular moment. It also did away with the objection mentioned by the last speaker, for the rubbing of the brake wheel suffices to prevent oxidation. He thought, however, that the physiologic limit had not yet been determined because of the lack of sufficient apparatus. He believed firmly that in view of the excellent work which faradic apparatus had done in the past, even in its crude form, in its improved form it should be capable of rendering very valuable assistance. Careful study by the graphic method, which is thoroughly scientific, will give a reliable basis for the comparison of future observations.

Dr. Morton thought Dr. Engleman's modification of the apparatus was a very desirable step in the right direction. These induction coils are very useful and serviceable, and they will probably be always more or less in demand. It is just such enthusiastic studies as these which are likely to bring forth good fruit. The mere fact that the number of vibrations can be recorded is in itself one of extreme importance. There is one advantage which the induction apparatus will always possess, and that is its great portability.

Dr. Engleman, in closing the discussion, said he thought the physiologic limit had been already determined. The best physiologic and physical effects are obtained from a coil which has a trifle less than 13,000 windings. The coils which have been already constructed have been made purely on experimental data.

EXECUTIVE SESSION.

Communications were read by the Secretary from Drs. Apostoli, Tripier and Gautier, of Paris; Drs. Henry McClure and Bruce Clark, of England; Dr. DuBois Raymond, of Berlin; Dr. La Torre, of Rome; Honorary Fellows, conveying to the Association an expression of their interest and sympathy in the work of the Association, and wishes for its success. Also from Drs. Campbell, Grier, Hutchinson and Munn, Fellows of the Association, regretting their inability to be present, and with wishes for a successful meeting.

The resignation of Dr. Anna Galbraith, of New York, was read by the Secretary, and on motion accepted.

Nomination of officers came next in order.

For President.—Dr. Morton said: It is a very difficult and delicate matter in an Association like this to make a

[3] The Interrupted high voltage primary or mixed current. Medical News, Feb. 3, 1894.

nomination for this office. Even though this Association be a most "vigorous infant," if we get the wrong wet nurse, the infant will lose much of its vigor. I would put in nomination the name of a man whom I think will promote the very best interests of the Association; a man who is an instructor, and who earnestly desires to have electro-therapeutists manufactured out of students who have received a fundamental education in the principles of electro-physics and electro-physiology. These students will come in time from Ann Arbor, and their teacher is not only well known to us, but he has graced every meeting, and by his personal qualities has endeared himself to all of us. I nominate PROF. W. J. HERDMAN for President.

The vote was unanimous, and DR. HERDMAN declared President. DR. FRANKLIN MARTIN, of Chicago, was elected First Vice-President, and DR. A. LAPTHORN SMITH, of Montreal, Canada, Second Vice-President. DR. R. J. NUNN, of Savannah, Georgia, was unanimously elected Treasurer.

DR. FRANKLIN MARTIN said that as no one could be more faithful than the present Secretary, he therefore nominated DR. CLEAVES as Permanent Secretary. DR. CLEAVES was unanimously elected.

EXECUTIVE COUNCIL.

Dr. A. H. Goelet, New York City.
Dr. Wm. J. Morton, New York City.
Dr. G. Betton Massey, Philadelphia.
Dr. Robert Newman, New York City.
Dr. Chas. R. Dickson, Toronto, Canada.

STANDING COMMITTEES.

On Standard Coils:

Dr. W. J. Morton, New York City.
Dr. A. H. Goelet, New York City.
Dr. W. F. Hutchinson, Providence, R. I.
Dr. G. J. Engleman, St. Louis, Mo.
Mr. A. E. Kennelly, Edison's Laboratory, Orange, N. J.

On Standard Meters:

Dr. Margaret A. Cleaves, New York City.
Dr. Emil Heuel, New York City.
Mr. W. J. Jenks, E. E., New York City.

On Standard Static Machines:

Dr. W. J. Morton, New York City.
Dr. J. H. Kellogg, Battle Creek, Mich.
Dr. G. Betton Massey, Philadelphia, Pa.
Dr. Margaret A. Cleaves, New York City.

On Standard Electrodes:

Dr. A. Lapthorn Smith, Montreal, Canada.
Dr. Chas. P. Dickson, Toronto, Canada.
Dr. Plym. S. Hayes, Chicago, Ill.

On Electrical Illuminators for Therapeutic and Diagnostic Purposes:

Dr. Plym. S. Hayes, Chicago, Ill.
Dr. Margaret A. Cleaves, New York City.
Dr. H. H. Hahn, Youngstown, Ohio.

New York City was selected as the place of meeting for the next year on the last Tuesday in September.

THE PRESIDENT announced a proposed amendment to Article III of the Constitution, viz.: Every candidate for admission to the Association shall be required to present a paper to the Executive Council, at least one month before the annual meeting.

THE PRESIDENT presented the Association with a permanent gavel with the name of the Association and its Presidents engraved upon it. It was a static roller electrode which had been presented to the Committee of Arrangements last year for use during that meeting. He then thanked the members for their consideration and for their assistance in rendering the meeting pleasant, interesting and instructive. He declared that he was proud to be numbered one of the fathers of this Association and was gratified with the progress it had made. It showed by the work thus far accomplished that it is destined to be one of the most important of our American organizations. In resigning the chair, and bidding adieu to the members in his official capacity he said he knew of no one to whom he would rather surrender the office than to the newly elected President, Dr. Herdman.

DR. HERDMAN—In accepting the symbol of office, I do not propose to inflict upon you a speech at this late hour. Allusion has been made on several occasions to the "vigorous infant" which you have placed in my charge for the ensuing year. I accept the charge with considerable diffidence. I understand that it has a great many grandfathers, uncles, cousins, and other blood relations, and without such relationship the infant is going to die. I accept the responsibility only on the condition that sustenance and support and constant interest of these blood relations shall not be withheld. The Association has already enlisted the interest of many worthy ones in other countries.

When I was nominated for this office this morning in such a flattering speech, I was relieved somewhat when Dr. Morton put it on the ground of my position as an educator. We know that in order to become expert electro-therapeutists, a fundamental education in electro-physics and physiology is essential, and should be an established part of the curriculum of the schools. This has been with me almost a fad; I trust that every member of the Association will make himself a missionary in this cause. Within the last four or five years there has been an effort to meet this need in all our important medical schools, and I have received many letters asking about the methods to be pursued in carrying out this idea.

I only trust that in selecting me, you may not find that I have in any way disappointed you. I am a member of a small scientific society which names its presiding officer, "the principal servant;" it is in this capacity I wish to carry out the duties of this office.

DR. MARTIN.—I have a word to say. It is difficult to mix smiles and sorrows; we look upon the retiring President and sympathize with his departing glory; we say, "the king is dead; long live the king!"

I suspect that Dr. Goelet had a special design in having the names enrolled as he did on his gavel, for on it and occupying almost the entire space is written, Massey, Morton, Goelet, and he has just left room for Herdman. Obviously he desires to limit the number of names upon it. But, seriously, Dr. Goelet's name will long be graven on our hearts, as well as upon this emblem. Our meetings, I think, have never been presided over with more dignity and urbanity than by him, and on the whole we must admit that he has kept his word pretty well about not being "a talking President." Every thing has been harmonious and our papers have been of unusual merit.

A rising vote of thanks, upon motion of Dr. Morton, was then extended Dr. Goelet for the very able and efficient manner in which he had presided over the meeting.

DR. GOELET.—I assure you the remarks of Dr. Morton have overpowered me. I can say no more.

Adjourned.

SULPHONAL POISONING.—Stern (*Deut. med. Woch.*, March 8, 1894), discusses the renal lesions in this condition. An insane woman, aged 70, received 1 g. of sulphonal every evening, the dose having to be doubled in a month's time. This was continued for more than three months, with frequent intermissions amounting often to eight days. When the total amount taken was some 150 g. the urine showed a dark color due to hematoporphyrin. The drug was omitted at once. Fatal coma, however, supervened in a week's time. The kidneys were of a pale red color, with smooth surface, and contained deposits of lime salts. These changes were such as might be attributed to advanced age, but the microscope displayed a very extensive necrosis of epithelium, and also minute hemorrhages. These minute changes represent a toxic nephritis, and were unquestionably due to the sulphonal. There was a large gall stone in the gall bladder, and small friable concretions in the scarred cystic duct. Very slight jaundice was present during life. The poisoning occurred here, as in other published cases, in a woman, and after the prolonged use of the drug. The obstinate constipation, the age of the patient, and the changes found in the myocardium no doubt accelerated the result. During the use of sulphonal the urine should be carefully examined for albumen or formed elements, as when once hematoporphyrinuria appears the prognosis is unfavorable. In the presence of renal disease the prolonged use of sulphonal should be resorted to with great caution.—*Brit. Med. Journal*, April 14, 1894.

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All members of the Association should send their Annual Dues to the Treasurer, RICHARD J. DUNGLISON, M.D., Lock Box 1274, Philadelphia, Pa.

SATURDAY, APRIL 28, 1894.

THE SURGERY OF HENRI DE MONDEVILLE.

That accomplished *savant*, M. NICAISE, who recently published an edition of the "Chirurgie de Guy de Chauliac," has brought out an edition of the surgery of Master HENRI DE MONDEVILLE, which proves conclusively that MONDEVILLE and not GUY DE CHAULIAC, was the father of French surgery. DR. PAGEL (J. L.) gave a Latin edition of MONDEVILLE in 1892, and with that exception the work has remained unknown quite down to our time. The predecessor of GUY of Montpellier, by fifty years, he lectured at Paris in 1306 and 1312, and the volume now edited by NICAISE is the identical course on surgery delivered more than five centuries ago by Master HENRI DE MONDEVILLE. NICAISE is of opinion that while the work was written in Latin, MONDEVILLE gave his course in French. As proof of this hypothesis he cites the fact of the existence of the manuscript written in the life time of the author, in the Bibliotheque Nationale.

MONDEVILLE had been a pupil of the famous THEODORIC, of Bologne, who among other advanced notions held that the "formation of pus was not necessary for the cicatrization of a wound," and he used dressings of wine, dressings that were antiseptic exactly in proportion to the percentage of alcohol contained therein. MONDEVILLE, who was the surgeon of PHILIP LE BEL, sought to introduce the wine dressings of THEODORIC into French civil and military practice. But MONDEVILLE had much trouble; he thus writes in 1312:

"It is very perilous for a surgeon to make an operation otherwise than according to the custom of other surgeons; we have a proof; for the treatment of wounds according to the method of THEODORIC, MASTER JEAN PITART and me, who have been the first to bring this method in France, and we were the first to employ it at Paris, and in many wars, contrary to the wish and the advice of all, particularly the physicians. We have well endured the disdain and shameful words on the part of the people and on the part of our confréres, the surgeons, and as well menaces and threats. From certain persons and physicians, every day, and at each new dressing, we have borne discussions and such violent words, that half vanquished, and fatigued by all this opposition, we had almost renounced this treatment, and would have completely abandoned it without the aid of the most serene COUNT DE VALOIS. But this Prince came to our aid, and also certain other persons, who had seen in the camps, wounds treated by this method. Furthermore, we have been sustained by truth, but if we had not been strong in the faith, and nominated by the King as Royal Physician, and not a few letters, it would have been necessary for us to have abandoned this treatment."

But the treatment, says NICAISE, "ceased to be employed after the death of MONDEVILLE," and GUY DE CHAULIAC, writing fifty years later, speaks "with a certain disdain and rejects the doctrine of MONDEVILLE on suppuration."

The wound treatment of THEODORIC, championed by MASTER MONDEVILLE, sought the immediate arrest of the flow of blood, and apposition of the lips of the wound; neither probe nor tent was allowed to be introduced, the wound was closed by suture, and a pledget soaked in wine laid upon it. The whole theory of treatment after the suppression of hemorrhage was based on exclusion of the air. MONDEVILLE frequently used a plaster of resin cerate or turpentine.

Ligature of arteries is mentioned as a matter of common practice, in the chapter on amputations. The teaching that we owe the introduction of the ligature to PARÉ is thus spoken of by NICAISE:

"This practice has remained, it seems, in the traditions of the Italian surgeons, where MONDEVILLE and perhaps PARÉ borrowed it. CELSUS spoke [of the ligature] also as a simple thing, and as well that ORIBASIUS reported the practice of ARCHIGINUS of Apamia, who tied the vessels after amputations and placed a ligature at the root of the member during the operation."

In the treatment of wounds of the belly, where the intestines and omentum had escaped, MONDEVILLE recommended immediate reduction after washing them with hot wine. In event of the wounding of the epiploön he said that the "considerable arteries and veins should be tied so that the blood escape not, and then replaced." When the escaped intestines were wounded, he considered the case incurable, but if the wound were so small as to close itself without suture, it was favorable. He excepted wounds of the great intestine from this gloomy prognosis, and sutured them with a Glover's suture of silk. He wished always to exclude the air, "which is suppurative and cold," from these wounds.

His materia medica list was large, but purely empirical. M. NICAISE has done a great public service in rescuing this manuscript of the Middle Ages from oblivion, and bringing it to the front.

THE ANTISEPTIC DRESSING OF THE UMBILICAL STUMP.

Under this title, DR. JOSEPH EVE ALLEN, in the *American Journal of Obstetrics* for April, makes an earnest plea for more rigid care of the cord in newborn children. The author reiterates the fact, long since known, that the separation of the funis is effected by a process of desiccation and that, therefore, any ulceration or suppuration is proof positive that the physiologic process has been interfered with. The method advocated by the author is as follows: The cord is ligated temporarily or clamped till after the nurse has washed the child. The accoucheur, having previously washed his hands and the child's abdomen and cord in an antiseptic solution, releases the ligature, strips the cord, pressing out as much of the contained gelatinous material as possible, and religates it with a silk ligature that has been rendered thoroughly antiseptic by being boiled in a strong solution of corrosive sublimate and afterward kept in a solution of iodoform in ether. The cord is then dressed with a piece of sterilized gauze, covered again with a pad of gauze soaked in chemically pure glycerin, and the whole retained by a sterilized flannel bandage. Each day the gauze pad is removed and a fresh one, soaked also in glycerin, applied; as often as the retaining band becomes soiled it is changed.

Under this treatment the cord often falls within three days, and the umbilical fossa should then be filled with aristol, a dry pad of gauze placed over it and the bandage re-applied. Repeated microscopic examinations of cords treated in this way, the author declares, failed to show the presence of any form of microbe.

This is but a step in advance of the practice of applying a piece of scorched linen to the cord, which has been in vogue for so long as to have descended to the place of an "old woman's remedy." And yet, like so many old wives' prescriptions, down at the bottom lies a grain of truth. The charcoal formed by the scorching was in fact an antiseptic to a very mild degree, and the heat rendered the linen aseptic. DR. ALLEN'S procedure starts out by making the cord aseptic and keeping it so by the sterilized dressing and the glycerin—in itself a mild antiseptic. The glycerin also serves the secondary purpose of hastening the desiccation by its hydroscopic qualities.

It may be urged that the treatment is unnecessary and meddlesome. The same was said of antiseptic midwifery, and the profession of one generation has seen the criticism silenced and antisepsis practiced in all the maternity hospitals and by most of the physicians of the world. It is true that infection of the cord rarely occurs, but that it occurs at all is an argument in favor of preventing it as far as human means can. Perhaps in the true country districts, with houses far removed from each other, with pure air and pure water, the risk of infection may be slight; but in the city, with its crowded tenement houses, its air loaded with particles of filth of all kinds from the streets, and its water of questionable purity, the necessity for care becomes imperative. The author's method may be too strongly antiseptic to suit some, but the main principle is good sound surgical sense; that the attendant should see to the dressing of the cord, having in mind the possibility of septic infection of the child, and not trust it to the unwashed hands of any old woman who happens to officiate as nurse.

"The danger of septicemia threatens every newborn babe, and can be certainly averted only by strict attention to asepsis; and the physician who does not practice its principles, and has septic diseases occur to infants in his charge, is derelict in his duty and is morally, if not legally, responsible;" such are the closing words of DR. ALLEN'S paper, and they are worth while pondering over.

REQUIREMENTS OF THE TEXAS LAW.

The Court of Civil Appeals of Texas handed down on Feb. 28, 1894, in the case of KENNEDY vs. SCHULTZ, a decision of considerable importance to the medical profession, and especially to practitioners in that State. This was an action brought to recover for services rendered as a physician. The party suing alleged that he was a physician in Bexar County, and had been ever since May 1, 1890; that he was a graduate holding a diploma from a reputable American medical college, recognized as such by the AMERICAN MEDICAL ASSOCIATION; that he had never resided in any county in Texas but Bexar, and never practiced his profession in any other county in Texas; that there had not, since May 1, 1890, been a duly appointed and qualified board of examiners in Bexar County, and, if such board or boards were ever appointed by either of the district courts, that none of the members had ever qualified, and for that reason it had been impossible for him to obtain a certificate, as required by law, and to have the same registered.

The petition in which these declarations were made was specially excepted to because it appeared from the face of it that the services rendered were in violation of the civil and criminal statutes of Texas, because the party rendering them had not caused to be recorded the certificate permitting him to practice medicine or surgery, which exception was sustained.

The court first of all holds constitutional the State law concerning physicians. The conflict set up between the statute and the constitution was that the statute provided that the board of examiners must be graduates of some medical college recognized by the AMERICAN MEDICAL ASSOCIATION, and that this

ASSOCIATION was composed entirely of adherents to the "allopathic" school of medicine. This court said that it could not possibly know that to be a fact, and could not go out into the field of speculation in connection with that subject.

Coming to the main question in the case, which has never before been directly decided in Texas, the court holds, in harmony with the uniform decisions of many other States, that a physician practicing medicine in violation of the law can not recover for fees for his services.

To practice medicine in Texas without having obtained a proper certificate and without having it duly recorded, is in violation of the civil statute, and this failure, the court holds, can not be excused on the ground that no board of medical examiners had been appointed. A violation of law can not be excused on the ground that some one else has violated it: so that, if there was no medical board in Bexar County, as required by law, this physician, for example, should have applied to some other board for examination, or at least have had his diploma recorded, in order that others might see it, and ascertain whether it was from some "reputable American college."

SMALLPOX AND TRAMPS.

In times of the prevalence of smallpox the best efforts of the sanitary officers are nullified or baffled by the Wandering Willy and Dusty Rhoades of the community. The cities have in their low-browed cheap lodging houses, as well as the rural districts in their workhouses, a source of danger in the unvaccinated tramp that deserves especial attention. The jail, likewise, to which the dirty and homeless "rounder" gravitates two or three times in the smallpox season is another menace. The prison is ordinarily free from danger, it being the rule with nearly all wardens to compel all newcomers to go through the ordeal of vaccination. But in reference to the former places of temporary abiding of the homeless class, it is expedient that an official inspection for vaccination purposes be made once to thrice a week during epidemic crises. The following sensible observations, by DR. RICHARD H. LEWIS, in the *Bulletin* of the North Carolina Board of Health for January, are worthy the attention of all local sanitary officers:

"We have already called attention to the rapid spread of smallpox over the United States and sounded a note of warning. Since that time the disease has made its appearance in our own State—in Cherokee; but thanks to the prompt and vigorous action of the County Superintendent of Health looking to the quarantining of the patient he did not abide with us long. Rather than be quarantined he left the State, thereby demonstrating in a very practical and satisfactory manner the value to the community of an organized health department with an alert health officer. Most fortunately also he came in contact with none except those who were protected by a previous attack of the disease, and we have good reason therefore to hope that he will not leave a trail behind him. There is no reason why a similar case should not crop out at other points in the State, particularly on the main lines of travel, which are now more than commonly infested with tramps. It is most unlikely to happen again that every one exposed is protected, and if not there is no telling, in view of the great number of unvaccinated persons to be found everywhere in the State, what a terrible scourge might then and there be originated. The danger is a real one, but how to get the people to realize it and avail themselves of the protection so easily obtainable is the question, and a most difficult question it is to answer. Most persons not acquainted with the temper of our people would say at once, Make vaccination compulsory. That sounds well, but it would be *vox et preterea nihil*. In the first place, in the opinion of the writer, our Legislature could not be induced to enact such a law; and if it could the law would, unsupported by public sentiment, be a dead letter. As to what public sentiment on this subject is the following will illustrate: At the conjoint session of the State Board of Health with the State Medical Society in Wilmington in 1892, one of our county superintendents reported that going to a public school house to vaccinate the children, according to a previous appointment, he found the house shut up and the entire school, teacher and all, taken to the woods. Again, more recently, an outbreak of the smallpox occurred in an adjoining State about fifty or sixty miles from one of our progressive towns. The Town Commissioners discussed the advisability of passing an ordinance making vaccinations compulsory. Whereupon certain citizens gave notice that they would remove from the town. Comment is unnecessary."

LICENSES MUST BE RECORDED IN ALABAMA.

The Supreme Court of Alabama holds, in the case of Nicholson v. State, decided Feb. 8, 1894, that the requirements of the Alabama Code, with regard to the recording of certificates, or "licenses," are mandatory and vital. It is provided that every certificate of qualification authorizing any person to practice medicine in that State, which shall be issued by any authorized board of medical examiners, shall be presented to the probate judge of the county in which such person resides, who shall officially indorse the same, seal it with the seal of the county, and cause it to be recorded in a book kept for the purpose. The very fact that no time is fixed to comply with these requirements, the court says, is a strong argument in support of the position that until they are complied with, the so-called "license" is waste paper conferring no right, perfect or inchoate. The language employed is equally positive and mandatory in respect of those requirements as in respect of the issuance of the certificate by the board of examiners, and there is as much room on the face of the statute, for holding the latter provision directory as the former. Until these things are done, the nom-

inal licensee is as much without authority to practice medicine, or, as it was in this particular case where the question was raised, dentistry, as if the paper had never been issued to him. And upon familiar principles, there being not even an inchoate right to so practice until the statute has been complied with in the respects mentioned, such compliance can not relate back, and relieve the practitioner of the penal consequences of having previously engaged in the business.

CORRESPONDENCE.

LETTER FROM EUROPE.

Major Girard, Surgeon U. S. Army, to Professor Senn.

No. V.

THE INTERNATIONAL MEDICAL CONGRESS AT ROME.

ROME, ITALY, April 7, 1894.

Dear Dr. Senn:—When I promised you a letter from Rome, relating to the International Medical Congress, I did not realize the import of the promise. I had been at the International Congress at Copenhagen and found there no difficulty in following the work of one or two Sections; at least, made notes as the papers were read, and elaborated them at night, so that at the end of the Congress I had a fairly full report of the general sessions and of at least one Section ready for the press. I found matters quite different here, and have been obliged to postpone this letter to the end of the Congress in order to arrange my notes and collect material, when I could not be present in person.

I find that my account of this Congress can not be condensed into one letter, and will devote the first one to general considerations.

The Roman Executive Committee have had no easy task of it, and can not be held responsible for all of the many shortcomings of this Congress. It is evident that the attendance far exceeded their expectations and preparations, thus causing in the commencement great confusion. Over 7,000 physicians attended the Congress. A great majority of these were attracted to Italy by the reduced fares and the prospect of taking in the wonders of this land, while ostensibly attending the Congress. The first two or three days they felt in honor bound to visit the Sections to which they had attached themselves, without, however, earnestly becoming listeners. The result was a restless going in and out, causing such a continued noise that only the persons occupying the rows of seats nearest the speakers could follow the discourse. The place appointed for the general sessions accommodated only 300 persons, while the first two sessions were attended, not only by nearly all the members of the Congress, but by a large lay audience of Roman citizens. The jam occasioned by this enormous concourse can well be imagined. Soon, however, the sights of the great Italian metropolis proved a greater attraction than the scientific work and the Sections were but slimly attended, and the audience in the general sessions fell to about one-half of the capacity of the hall.

In his speech at the dinner given by Minister Baccelli after the third day of the Congress, Prof. Virchow characterized this change with satire. He reverted to the softening influence of Italy. Even Hannibal had lost the edge of his sword under the smiling skies of Capua. Thousands of physicians had wandered across the Alps with the earnest intention of devoting themselves to severe scientific work, but the irresistible amiability of Roman hospitality had somewhat blunted the scientific zeal. He feared that the Congress would fare somewhat as Hannibal did in Capua.

There was another circumstance inimical to continued serious attention. The number of papers presented to the Congress was 2,700; of these more than one-half—perhaps three-fourths, were in the Italian language, which was understood by a small minority of the 3,000 foreigners. At first the papers were read regardless of the language, often compelling the majority of the audience to listen for hours to a tongue they did not understand. This naturally led to disappointment and indifferent attendance. In some of the Sections this was partly remedied by relegating the Italian papers to the latter part of the sessions, but the stream of favor had already been diverted to other channels and the attendance did not recuperate in numbers. Another great drawback was the distance of the Poli-clinico from the city. This building is a large hospital on the pavilion plan, completed, but not furnished in time for this Congress. While the first three days it was entirely inadequate for the vast attendance, it was very comfortable during the latter part of the Congress, but still its location caused a loss in transit of two hours a day, unless one took the slim chances of getting a luncheon in the restaurant established in the Administration building.

Now as to the papers presented. Either the reader of the proceedings, when once they are published, or the publishing committee, who will have to select the papers suitable for printing, will have a hard task of it to sift the wheat from the chaff. A general plan of subjects to be reported on and discussed, if such a one existed, was not followed, and if any particular subjects received more attention than others, they received it accidentally because they happened to be questions of the present fashion in medicine. At least 1,500 of the papers presented were of Italian origin. The majority of these papers could not be of any scientific value, as Italy, no more than any other country of equal size, has such a number of physicians capable or in position to manufacture mental food of quality sufficiently good to be worthy of presentation at an International Congress and preservation as a matter of record or a specimen of the progress in medical training.

I believe, therefore, that for immediate or remote scientific results this Congress is a failure, and that all international congresses, when the attendance can not be reduced to a conference of more select spirits, and when distractions can more than fill the week allotted to the meetings, will be equally barren, compared to the time and money devoted. Still, for all this, I would not condemn these gatherings as useless. We can always notice a nucleus of renowned men, who closely follow the work and, if they do not participate much in the discussions, they gather in what is worth keeping. Around these come in concentric layers the less distinguished, perhaps younger generations, who sooner or later advance to the inner layers.

In this manner, insensibly as it may seem, the men of similar caliber congregate, become acquainted, learn to gauge each other and their methods of investigation and reasoning. These little cliques, as we may call them are, however, limited by language, and when a congress is held in four languages, while but a very small part of the members have command of more than two, and the great majority of but one, as here, the congress ceases to be international as far as the scientific work is concerned.

I have prefaced this letter with general remarks, which properly belong to the epilogue, but deemed them of importance for a correct understanding of what may be said in the secular and medical press.

SOCIAL FEATURES OF THE CONGRESS.

As to the social amenities, of which, judging from the

above remarks, there must have been many, they are very creditable to Roman hospitality. When the fetes were general, with admission of a large concourse of invited residents, the arrangements were not sufficient to control and guide the multitudes assembled. Selected gatherings and dinner parties, however, were as exquisite as liberality and art could make them.

The festivities commenced with Sunday, on which various excursions to the Roman "Castelli" were arranged. I participated in one of the Military Section, to Tivoli, to visit the falls of the Arno, the Temple of Sibyl and the Villa d 'Este, the country seat of Cardinal Hohenlohe, who had offered the use of the large castle for a luncheon to be given by the medical officers of the Italian Army to the medical officers of foreign armies, of which a large number were present; not less than sixty of the German Army. The Secretary of the Section, Dr. R. Livi, gave evidence of great organizing talent in this entertainment, as well as in others given by his Section; decorum was never lacking and the crush of other entertainments was avoided by personal attention to accomodation.

The same day a concert was given by the Mayor of Rome to the members of the Congress at the Constanza Theater. In the evening, Minister Baccelli, the President of the Congress, gave a magnificent dinner to the more distinguished members of the Congress, and to the official delegates of the several governments. I had the good fortune of being invited as delegate from the Army Medical Department.

One evening the vast ruins of the palaces of the Roman emperors on the Palatinum were illuminated with Bengal lights; several bands of music played during the evening; the King and his court were present on a special balcony; a powerful electric searchlight illuminated at a distance the thermes of Caracalla, the pyramid of Cestius, the aqueducts, the arches of Constantin, and of Titus, and the Coliseum, etc., the whole making a most splendid spectacle.

Another evening there was a reception in the museum of the Capitol—a most elegant gathering, but such a jam I have never witnessed. The Venus of the Capitol, generally acknowledged the best statue of the many Venuses of antiquity, was illuminated with rose-colored light and appeared life-like.

Tuesday afternoon the Queen of Italy gave a garden party at the Quirinal, to which a limited number of invitations were issued to distinguished members of the Congress and to delegates. Of the Romans, only those who were received at court were present. I was also among those fortunate. Presentations to the King and Queen, music by two fine bands, and luncheon served by the royal servants were the order of the day. The affair was very enjoyable.

The last day of the Congress was celebrated by the dinners of the several Sections. The one by the Section of Military Medicine and Surgery to which I was invited, was held at the Aquarium, a dome-shaped magnificent hall. Nearly every person of about 300 guests was dressed in full uniform with all their decorations. The United States Army uniform looked very plain among all these brilliant uniforms, but the spectacle was brilliant, the menu very good and the speeches in the various tongues cheering.

After the closing of the Congress a luncheon was given at the immense Roman baths, the thermes of Caracalla, at which 14,000 persons were present, with the jam usual on these general occasions.

A flower corso in the afternoon, at which over 3,000 carriages participated and a punch by the officers of the Italian Army, at their club, to the members of the Military Section, concluded the official festivities.

Numerous private balls, concerts and dinner parties were given during the Congress.

All the galleries and museums were open to the members of the Congress free of charge. It will be seen that it required an unusual sternness of purpose to steadily pursue the scientific work, and it will not be saying too much, if I assert that 90 per cent. of the members of the Congress fell more or less from grace.

A few words on the opening of the Congress and the organization of the Sections, and I will conclude this letter, hoping to find time during my return voyage to give you an extract of the scientific work.

The first day was the grand opening of the Congress, in presence of the King and Queen, their court, the foreign ambassadors and the members of the Congress at the Castanza Theater. The multitude present, inside and outside of the building, was enormous. The introductory address was made by Minister Crispi, followed by Baccelli, Ruspoli, Virchow, and others, upon which Maragliano, the Secretary-General made his report. This was followed by speeches of the representatives of the various nations, and presentations to the King and Queen. The Presidents of the nineteen Sections, all Italians, were announced and from the national committees of the visiting nations the following illustrious names were announced as Vice-Presidents: Virchow, Sir James Paget, Sir W. MacCormac, Stokes, Stockvis, Grainger Stewart, Kocher, etc., and last but not least, Jacobi of New York, for the United States.

The speakers at the general sessions to be held in the afternoon at 4 o'clock (or as the Italians say at 15 o'clock) were by Virchow, Brouardel, Babes, Foster, Nothnagel, Laache, Danilewsky, Bizzozero, Cujas, Kocher, Jacobi, and Stockvis. These sessions were held at the Eldorado, near de Hygienic Exposition, on the Via Nationale, in the center of the city, while the sessions of the Sections were at the Poli-clinico, as mentioned above.

In the afternoon of the first day the Sections were organized; that of Surgery electing Durante of Rome, as President, with Spencer Wells, MacCormac, Stokes, Macewen, Konig, Mikulicz, Ollier, Péan, Championniere, Lorenz, Janny, Lavista, Rossandu, Kocher, Murphy as Honorary Presidents. The Section of Military Medicine and Surgery elected Cipalla as President, and as Honorary Presidents, among others, Col. J. R. Smith, Assistant Surgeon-General U. S. A., senior delegate from the War Department, and myself among the Honorary Secretaries.

The sessions of the Sections lasted from 8 to 12, and from 1 to 3, but soon the majority of the afternoon sessions were abandoned. A great haste was apparent, in order to get through the vast number of papers, and many of those who had announced theirs were anxious to present them, in order to follow the army of those who preferred sight-seeing to the scientific labors.

A. C. GIRARD.

What the General Practitioner Should Know About Diseases of the Eye.

CHICAGO, April, 1894.

Dr. T. A. Smith read a paper with the above title before the Tennessee State Medical Society, which was published in several medical journals. The object of Dr. Smith's paper was to define the minimum amount of knowledge the general practitioner should have before entering upon the practice of medicine. I took exceptions to his ideas in an article with the same title in this JOURNAL, Feb. 3, 1894. Dr. Smith replies to my criticism in an article in this JOURNAL of April 14, 1894.

In Dr. Smith's first article he says the general practitioner should not attempt to use the ophthalmoscope. On this statement I took decided issue with him, and in his article of February 14 he repeats his former statement. In my article of Feb. 3, 1894, I cited cases of glaucoma, cataract,

optic atrophy and albuminuric retinitis where the ophthalmoscope would have been very valuable in helping him make a diagnosis. In answer to the first and second, Dr. Smith says he does not need an ophthalmoscope. That any case of glaucoma can be easily diagnosed by the tension alone, as it does not require any great amount of skill if it is at all marked, and the ophthalmoscopic signs do not appear until late. The reference given below will show how misleading this is.

I do not maintain that the general practitioner should become an expert with the ophthalmoscope and tie his hands. Just because he can use the ophthalmoscope he need not be barred from using his fingers to test the tension. He might make a mistake were he to depend upon either alone. No doctor would ignore his stethoscope because he had a microscope and could examine sputum with it. If Dr. Smith's cases of glaucoma are all inflammatory, then he may get along nicely without an ophthalmoscope, but if he has, as others have, cases of glaucoma simplex and can make a diagnosis by the tension alone, I will give him the credit of having his sense of touch very highly developed.

Every one knows who does work in ophthalmology that we often see cases of glaucoma simplex where the tension is normal, or if it is elevated we can not detect it, and the patient has no pain or any symptom that would lead us to suspect glaucoma, except loss of vision. With such cases we use the ophthalmoscope or fail to find the trouble. If the specialist can not detect the tension I think it poor policy to advise the general practitioner to rely on it. To keep this from appearing as personal difference of opinion, I will quote a few works that are called good authority, *verbatim:*

Fuch's 1892, "Glaucoma Simplex," page 343: "In glaucoma simplex, the increase of tension sets in very gradually, so that no inflammatory phenomena are produced. The eye either looks quite normal externally, or it gives evidence of its lesion through the greater prominence of the disturbed anterior ciliary veins, and also through a somewhat dilated and sluggish state of the pupil. The tension of the eye is shown by palpation to be elevated, but not to any considerable degree. Often on the first examination no increase of tension is found at all; it is not until we examine the eye repeatedly, and especially at different times of the day, that we succeed in demonstrating that the tension is elevated. At these times a slight, smoky cloudiness of the cornea is also present, such as appertains to the prodromal attacks of inflammatory glaucoma. Finally, there are cases of glaucoma simplex in which the tension is never found distinctly increased; in consideration of the fact that in glaucoma simplex marked external symptoms, and sometimes indeed, any manifest increase of tension are wanting, and we are thrown back upon the ophthalmoscopic examination for the establishment of a diagnosis. Such an examination shows the presence of a total excavation of the optic nerve, the depth of which corresponds to the duration of the process."

Meyer, 1887, page 251: "Simple Glaucoma: In this variety of glaucoma the inflammatory symptoms are entirely absent, and the appearance of the eyeball does not materially differ from that of the normal eye. At most we may find, after some exciting cause, a slight pericorneal injection, and a slight turbidity of the aqueous humor, soon disappearing. In short, the patient does not complain of any pain, and the exterior of the eye preserves its natural appearance. It is often difficult in the early stages, and even throughout the disease, to decide by the sense of touch whether the eye be harder than usual. This is all the more difficult that the physiologic tension is subject to considerable variation. To the opthalmoscope the media of the eye seem to be completely transparent; but we find the characteristic excavation of the papilla and the arterial pulsations, which are either spontaneous, or easily produced by slight pressure of the fingers on the eye."

Noyes, 1890, page 506: "Patients often can give little account of the premonitory symptoms, although they have long existed. When well established it is often mistaken in old persons for senile cataract, especially because the lense in old age has a smoky hue. This explanation of failing sight is considered adequate, and a resort to skilled advice is discouraged. Under this mistake the patient is told to wait until the supposed cataract shall be ripe before going for relief, while the delay is simply affording time for the loss of all chances of recovery."

Page 509: "No dependence can be placed upon the external signs because the eye looks healthy, central vision may be normal or nearly so, and subjective symptoms are obscure or have been unheeded; tension may be doubtful. We are then confined to two symptoms, the appearance of the optic nerve and a careful scrutiny of the visual field."

(In Noyes work of 1894 the above is found, pages 551 and 554).

G. E. de Schweinitz, 1892, pages 373 and 374: "Chronic Glaucoma. This type of the disease is characterized by an absence of the signs of glaucoma in the anterior aspect of the eye, at least, on ordinary inspection. By careful examination a slight steaminess of the cornea may sometimes be detected, with a little lack of transparency in the aqueous humor. So, too, there may be some undue tortuosity of the perforating branches of the episcleral plexus. In general terms, however, there is an absence of congestive symptoms, and there is no pain. The tension of the eyeball is but slightly increased, and often it is difficult to decide whether it is increased at all. The media are clear, and the disease is detected with the ophthalmoscope by observing the characteristic cup in the nerve head, the halo surrounding it, and the spontaneous arterial pulse or its ready development by slight pressure." (The references I have given are copied word for word, so the general practitioner can see the weight of authority.)

No one will say a doctor ought not to take the tension of an eye, but why depend upon it and advise him not to attempt the use of an instrument that will assist him in making a diagnosis?

I am sure it would be better for the patients if the general practitioner knew how to use the ophthalmoscope, and infinitely better for the specialist, for then there would be found patients that needed a specialist much more often than there would if the general practitioner did not use the ophthalmoscope. Dr. Smith fails to say why the general practitioner should not use the ophthalmoscope in locomotor ataxia and albuminuric retinitis mentioned in my article. About 15 per cent. of the cases of posterior locomotor ataxia have atrophy of the optic nerves, and whenever we have atrophy it appears before the ataxic symptoms.

Dr. Smith in his first paper says the general practitioner should know when spectacles are supposed to be indicated. Let him use the ophthalmoscope and he would not have to suppose; *he would know.*

I would refer the general practitioner to Gower's work on medical ophthalmoscopy to see the necessity for the use of the ophthalmoscope in functional nervous diseases, the main indications of which should be recognized by the general practitioner.

I do not write this article simply to get the last word, like two little boys quarreling, but for the good of the general practitioner, the patients that intrust their health and happiness to him and the specialist. The general practitioner, as a rule, does not use the ophthalmoscope, but it is unjust to him and his patients to advise him not to use an instrument costing so little, and of so much importance.

103 State Street. W. A. FISHER, M.D.

Protection for Vaccinated Arms.

MT. PLEASANT, IOWA, April 17, 1894.

To the Editor:—In our "Correspondence" of the JOURNAL, February 24, I hoped as a result of it to elicit some ideas, either suggestive or final, of value in the direction aimed; and perhaps also, that some one would bring up the subject for the same purpose next June, at the meeting of the AMERICAN MEDICAL ASSOCIATION. Of the former, there has been no result. Of the latter, it is yet too early to know what may be done.

Having myself concluded my opinion of the best plan of

protection to the vaccinated—the subject we have in consideration—I will advance it; and also as a reason for this second communication.

Cut two triangles out of any piece of cloth which may be at hand; a lesser triangle cut from the base of the first and larger triangle, and you have a V, the first letter of vaccine. Vaccination as a word is peculiar, in suggesting to the most illiterate that it begins with V, and V seen on the arm of a person is hence suggestive of *vaccinated*, and is at once a danger signal to the wearer. Railroads protect by signals their charges, and why should not the medical profession protect its vaccination train? Prophylaxis is considered by many to be the highest sphere in medicine; if this is so, is it not desirable to make it as perfect and complete as possible? Something cheap, simple, expeditious and efficient it seems to me is in this manner obtained. It is easy to make, easy to sew on (easier than a band), and no choice necessary (except, perhaps, to select the most conspicuous, if there is a choice), in selecting the kind of cloth.

Let us hope some one will present this subject to the ASSOCIATION, and something in this much needed direction be accomplished by the profession at its next National meeting. Very truly, H. L. GREEN, M.D.

Big Things.

To the Editor:—In a friendly chat with one of my medical friends, recently, I asked him why he did not take the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. His reply was as follows: "It is too full of *big things*." There is some truth in this assertion. The JOURNAL is often full of big things; my friend claims that the so-called expert and the specialist are allowed too much space in which to air themselves; that it requires too much effort upon the part of the country doctor to digest the "big things." He says the country doctor's time is better spent in reading a few practical *truths* than in trying to analyze a lengthy article on "Electro-anesthesia and Frequency of Induction Vibration;" "The Esoteric Beauty and Utility of the Microscope"; "Appendicitis with Original Report of One Hundred and Forty-one Histories and Laparatomies for that disease under Personal Observation." To the specialist these big things are really *big*, but to the average country practitioner they are too utterly too too. He has neither the time nor inclination to read these effusions, even if he had the ability to digest them. For the above reasons the country doctor will subscribe for a journal that deals in things not quite so big.

I take the JOURNAL because its contents are from the pens of the ablest men in the profession. (*I* write occasionally, *myself*). But I never get on a high horse and try to say things that the reader can not possibly understand. I believe it was Josh Billings who pointed out the folly of learning too many things that were not so. Most of the *big things* in all the journals are examples of this kind of knowledge. I have often thought of writing an article on microbes; in fact did write a squib on the "Microbe of Drunkenness" and suggested the name of Cloridi of Dwightii or Goldii, I have forgotten now which, but it does not matter—*microbes* are *little things* and I am on another subject. But before I forget it, I will say that filth and vermin are often found together, therefore vermin are (or is) the cause of filth, or filth is the cause of vermin, I do not know which; but this is a very clear proof of the correctness of the germ theory. It is very plain to a man who understands it, but I don't understand it, you see.

The next "big thing" to which I call attention, is the nostrum vendor. Th's dare-devil worries me; every mail brings some of his diabolical literature or some of his infernal stuff, "all free gratis and for nothing." I will treat any doctor in the United States to a plug hat who will show me how to stop this fellow from writing me. One day he tells me about tablets, the next about pills, the next about elixirs, and then comes the "Ines," "L——ine," "H——ine," "P——ine," "H——ine," "T——ine," "Y——ine," "M——ine," last but not least "B——ine," all of which are certainly *asinine*. If this monster can be killed off I would be glad to know it.

Kentucky has made a raid on him and I hope will rout him. Other States ought to follow suit. Recollect, I am not making war on the "Ines;" they are inoffensive *per se*.

What I object to is the knave who puts on the almanac attachments. "A—a" with its almanac attachment is no better (to me) than "Jayne's Expectorant." If a remedy will not sell without this attachment I'll never buy it. If quinin, morphin, opium, chloral, chloroform and calomel should be accompanied with an almanac attachment, together with all the lies that usually go with such, then they too would be stricken from my list of remedies. A remedy that will not sell on its own merits is like a doctor who depends upon a newspaper for his reputation. Neither one will do to trust (in my estimation). The genuine medicine needs no almanac attachment. The first class doctor never advertises. The nostrum vender is a big thing *as a nuisance* and ought to be abated. The advertising doctor belongs to the same category and if you will watch right close you will see these two fellows very close together. The newspaper doctor prescribes nostrums. "J——e," "O——n," "S——e," are favorites with him,—but I must close.

Respectfully yours,
W. P. HOWLE, M.D.

The Code and Railroad Corporations.

SAN DIEGO, CAL., April 16, 1894.

To the Editor:—I have hitherto refrained from discussing Code revision, though mentally applying to *some* of the diatribes forninst the dear old Magna Charta, that well-known couplet:

"No rogue e'er felt the halter draw
With good opinion of the law."

For more than thirty-five years I have associated it with the Decalogue and the Hippocratic oath, never realizing that either of them was particularly irksome, nor believing that all men could be induced to abide by them, however modernized. In elegance of diction and loftiness of sentiment I know of no instrument comparable with it. Its quaintness lends to it an additional charm, and I much fear if we begin to revise and amend it we shall leave nothing worthy the name. Perhaps a better solution of the problem would be to adopt the suggestion and the language of the poet as he saw vandals carrying off the good ship, *Constitution*, piecemeal. He wrote, as you remember,

"Ay, tear that tattered ensign down,
Long has it waved on high,
And many an eye has danced to see
That banner in the sky.
Nail to the mast that holy flag,
Set every threadbare sail,
And give her to the God of storms,
The lightning and the gale!"

But if the suggestion of the Committee, to drop the section covering the duties of the laity to our profession, shall prevail, I hope some equally good advice to railroad corporations will be substituted in its place. And this, in connection with Dr. Lichty's timely contribution to your April 7 issue, suggests a reminiscence, for which the indulgence of your readers is solicited.

In the spring of 1869, near Wasatch, on the U. P. Road, the writer was seated in one of five coaches that plunged down a thirty-foot embankment. Upon recovering his equilibrium he closed the door of a stove suspended above his head, to prevent a threatened conflagration, and walked out on the *ceiling* to a place of exit. Several persons were killed outright, among them the nephew of Chief of Police Crowley, of San Francisco, and many more sustained various injuries. For hours the doctor stood in the melting snow, treating all applicants until both of his pocket cases were exhausted, and possibly saving the Company thousands of dollars in the matter of suits for damages. Upon reaching home he was laid up for

three weeks with inflammatory rheumatism, caused by the fall and subsequent exposure, his business, meanwhile, suffering from neglect. The recital is not unique in the experience of our profession, as Dr. L. suggests, nor is the sequel. For he has never received the thanks, much less an honorarium, from the Company. Nor would the incident be recalled at this late date except to point the moral, that doctors, journeying as they annually do for the public weal, are entitled to something better than Midwinter Fair rates. Change the Code? No, but rather the consciences of men.

Faithfully yours,
C. M. FENN, A.M., M.D.

A Curiosum.

INDIANAPOLIS, April 21, 1894.

To the Editor:—Our Board of Health concluded to have a new pest-house.

Once on a morning, this month, our Mayor with his medical advisers and constables marched out, as in ancient times the burgomasters did, to burn the old pest-house. The old ground would become valuable and be sold at a price to purchase a new ground and to build a new house.

The foolish act was done with great dignity. But in the very afternoon a tramp marched in town with smallpox. Certainly the court house was vaccinated from the Mayor to the watch-dog, and so the station house. Then, with equal dignity, the whole city government sat down in a meeting: the Mayor, the Board of Public Safety, of Public Works, of Health and Charities, and all wise men of the town.

Whereas no bids for the old grounds had come in, it had been unanimously concluded to build new pest-houses on the same ground, but little ones, that the mistake may not appear too great.

Perhaps it is advisable to publish this incident as a warning. G. B.

From Dr. Woodbridge.

YOUNGSTOWN, OHIO, April 20, 1894.

To the Editor:—I supposed that when I published my paper, "Can Typhoid Fever be Aborted," that I would immediately be buried under an avalanche of adverse criticism. It was, therefore, a great and very agreeable surprise when letters of commendation and inquiry began to pour in upon me from every part of the United States and Canada. I regret that I can not answer them, and at the same time (in addition to my other duties) prepare a paper for the San Francisco meeting. If the writers will excuse me until I return from the meeting of the AMERICAN MEDICAL ASSOCIATION I will employ a stenographer and will then take pleasure in answering, as far as I am able, every question.

Very respectfully,
JOHN ELIOT WOODBRIDGE.

Philadelphia County Medical Society.

To the Editor:—At a meeting of the Philadelphia County Medical Society held April 18, the following resolutions were adopted:

WHEREAS, The Code of Ethics of the AMERICAN MEDICAL ASSOCIATION declares it derogatory to professional character for a physician to dispense or in any way promote the use of a secret nostrum; and the AMERICAN MEDICAL ASSOCIATION by a resolution unanimously adopted at its meeting in 1892 forbade the advertising of such nostrums in its JOURNAL; and

WHEREAS, The JOURNAL of the ASSOCIATION has continued to advertise such nostrums and in defense of its course in this particular has published an anonymous personal attack on a member of the AMERICAN MEDICAL ASSOCIATION and of this Society;

Resolved, That the Philadelphia Medical Society respectfully demands that the Trustees of the JOURNAL shall in their public official acts, respect the spirit and the letter o its Code of Ethics; and that the columns of its JOURNAL shall not be used for the anonymous personal abuse of its members in good standing.

Resolved, That a copy of these resolutions be transmitted to the Medical Society of the State of Pennsylvania; and to the AMERICAN MEDICAL ASSOCIATION; and to the weekly medical journals. T. B. SCHNEIDEMAN, Secretary.

PUBLIC HEALTH.

Smallpox.—Except in Chicago, smallpox is fast losing its importance as a factor in the public health situation. The disease seems to have attained its maximum spread about the middle of March, when a total of 219 infection centers had been reported in twenty States and the Dominion of Canada. At the beginning of the present week there were reported as still remaining fifty-five infected points in the following States: Massachusetts, Connecticut, New York, Pennsylvania, Indiana, Illinois, Wisconsin, Minnesota and Iowa.

The lodging-houses continue to give some trouble in New York city, nearly all the recent cases being found in these unsanitary premises. Another inspection of them was recently begun, this time at night so as to secure the vaccination of all inmates. An occasional walking-case still turns up in the city public offices, and a clerk in an office on the ground floor of the City Hall was recently taken to the pest-house. The building has been again disinfected and all occupants and employes from the Mayor down to the scrub-women, have been again vaccinated or re-vaccinated. The disease, which was declared epidemic in Brooklyn in March, had almost entirely disappeared in that city during the early part of the present month. April 4, for the first time, in several months, no new cases were reported. There was however, a recrudescence of the outbreaks soon thereafter and the work of inspection and vaccination is still being vigorously prosecuted. Infected and suspected premises are rigidly quarantined, in one case fourteen whole blocks of buildings being in charge of a corps of vaccinators and disinfectors, protected by the reserves of five police stations, and the entire population of about 5,000 were vaccinated in a single night. Elsewhere in the State, tramps conveyed the disease into the Wayne County poor-house, April 1; into the police station at Syracuse, April 8; and into the county jail at Schenectady March 18, where the character of the case was not discovered until April 6 by which time six other cases had developed.

The arrival at New York of two of the Netherlands line of steamers with smallpox on board caused the Health Officer of the port to notify the Company that its vessels will not be allowed to enter, unless their crews have been vaccinated before clearing from Rotterdam, and to request the United States Consul at that place not to give clearances for New York to these steamers unless this provision is carried out and the passengers and crews are disinfected before the vessels sail.

In Pennsylvania there were reported fifty-nine cases in the State, all but two of which had been directly traced to Danville, where, as previously noted, the disease was declared epidemic March 23. Advices from Dr. Benjamin Lee, Secretary of the State Board of Health, announce that smallpox has disappeared from Tyrone Forges, Reading, Williamsport and Wilkinsburg.

Dr. C. N. Hewitt, Secretary and Executive Officer of the Minnesota State Board of Health, reports that State free from smallpox except the cases in St. Paul, where there have been two infected houses—some half dozen cases in a suburban hotel, from which there has been no spread, and one case in a house in the city itself; this latter case was

that of a young woman in a private family, origin unknown and no connection with the first outbreak. "There is no likelihood of any spread from either of these cases."

Dr. Scott, Secretary of the Illinois State Board of Health, in his report to the Board at its meeting on the 24th inst., refers to the remark of his predecessor, Dr. Reilly, at the January, 1892, meeting of the Board, to the effect that Illinois was then in greater danger of a smallpox epidemic than of one of Asiatic cholera; and urging that, while proper precautions should be taken against the latter disease, the renewal of the vaccinal protection of the State was of even greater importance. To the work then begun, and since vigorously continued, he attributes the fact that, notwithstanding the infection has been carried into twenty-two points in the State, either by tramps or others from Chicago—in only one instance has there been any spread beyond the family or premises first infected, while in the majority of instances there has been only a single case. The exceptional instance is at a manufacturing suburb of Chicago, where three families have been infected. At the date of the report there were eleven infected points, with seventeen cases remaining, outside of Chicago. In Chicago from January 1 to April 21 there were 962 cases, apportioned among the several months as follows: January, 128; February, 233; March, 305; April (to the 21st), 296. The average for the first twenty-one days of April was 14 cases a day, and at this rate the total for April will be 420 cases, an increase of 30 per cent. over the previous month. Infection centers are widely distributed, cases having been discovered during the last week in twenty-one of the thirty-four wards of the city. The resources of the health department have been overtaxed; the smallpox hospital crowded beyond its limits, so that cases are now retained at their own homes. At the close of the week there were some sixty cases being treated at houses in twelve different wards in every division of the city, the majority, however, in the west division in the group of wards opposite the business district. There were twenty-six infection centers in the tenth ward alone—one of this group.

The municipal authorities have at last awakened to the gravity of the situation; the Health Department, crippled hitherto by want of funds, has been given *carte blanche* as to expenditures; a second 100-bed extension of the smallpox hospital is under way; an adequate ambulance service is provided; the city has been districted and each district is in charge of a qualified physician with unlimited authority as to men and measures necessary for the prompt suppression of the epidemic; inspectors are stationed at all railway stations and the house-to-house inspection is being repeated—this time by competent physicians,—the former inspections by policemen having proved worthless. In concluding his report, Dr. Scott adds:

"Meanwhile the wholesale vaccination begun by Health Commissioner Reynolds last year is being vigorously pushed, and it is upon this work that the greatest reliance is to be placed. More public vaccinations have been performed in the city of Chicago within the last few months than among any other equal number of people probably in the world, and if the work is continued it is only a question of time when the epidemic will die out for want of material."

Asiatic Cholera.—Recent reports of the westward spread of Asiatic cholera in Europe are by no means reassuring. It has been reported successively in Turkey, Poland, Belgium and Portugal—late cable dispatches announcing sixty-five new cases in Lisbon on the 22d, and 104 more, with three deaths, on the 23d. Spain has established quarantine along the frontier and has also dispatched a medical man to Lisbon with instructions to report the progress of the epidemic direct to Madrid—the Portuguese Government having suppressed information by wire. Inspector General Proust reported to the Council of Public Hygiene of Paris, three cases of the disease at Liege, Belgium, during the last week of March, but the fact was not made public until April 19. The disease has continued to spread in Constantinople, among its recent victims in the higher classes being the Director-General of the Tobacco Monopoly. The situation is being made the occasion of urgent appeals in the columns of the secular press for a rigid enforcement of the precautionary measures adopted by the recent International Sanitary Conference in Paris. These measures embrace a system of medical inspection and disinfection of pilgrims for Mecca before embarkation, and also of the vessels upon which they are to be carried; each vessel is to have a qualified physician, is to be supplied with a *per capita* allowance of good drinking water, etc., and is to furnish a given amount of space for each person on board. The Turkish lazarettos are to be reorganized on the plans laid down by the Conference at the Venice and Dresden sessions. Most important are the measures to be enforced with the returning pilgrims; it is their filthy and often diseased condition, due to their mode of life in the "holy city," that constitutes the menace to public health, and which has so often been the means of importing cholera into Egypt, Algeria, Tunis, Bosnia and thence to the rest of the world. Strict sanitary measures are to be enforced with them, especially at the lazaretto in the Turkish dependency of El Thor in Arabia Petrea on the east shore of the Gulf of Suez, and the Sultan is urged to thoroughly reorganize his sanitary administration—a recommendation which it is believed, in view of the special mission already dispatched to the Yemen under Assaf Pasha, will receive prompt attention.

Quarantining Chicago.—Conferences of neighboring State health officers have been held at Chicago with a view of determining the necessity of instituting quarantine measures against the deportation of smallpox from the city. The impracticability of such measures seems to have been conceded after investigation by Secretary Probst of Ohio, Metcalf of Indiana, Scott of Illinois, Reeve of Wisconsin and Hewitt of Minnesota. Nevertheless Dr. Hoyt, Health Officer of St Paul, has asked the Mayor of that city to take steps to establish a quarantine against Chicago. The Mayor does not believe the situation warrants such action at the present time.

Tramps and the Public Health.—In the majority of the 219 smallpox centers thus far reported, the origin of the infection has been directly traced to tramps. It has been repeatedly urged that every municipality should have a standing order that, before giving shelter or other assistance to one of these gentry, he should be examined as to his vaccinal status and if this is not satisfactory, he should be vaccinated forthwith. The tramp is a serious menace to the public health in many ways, but, in respect to the propagation of variola, he may readily be made innocuous.

Fighting Vaccination.—Suits to prevent the enforcement of school vaccination orders are growing in frequency. In addition to those already reported in New York, Pennsylvania, Indiana and Illinois, similar proceedings have been begun in Connecticut, at New Britain, and at Beloit in Wisconsin. At the latter place the State Board of Health is defending the school board, and will probably be called upon to do the same for other boards in that State.

Coxey and Preventive Medicine.—Some of the divisions of "Gen." Coxey's army of "commonwealers" have submitted *en masse* to vaccination. This has been made a condition by some communities to the supply of provisions and shelter. If the precedent should be generally followed the cause of preventive medicine, so far as smallpox is concerned, would be a large gainer by "Gen." Coxey's "petition on foot."

BOOK NOTICES.

An American Text-Book of the Diseases of Children; including special chapters on essential surgical subjects. by American teachers. Edited by Louis Starr, M.D., assisted by Thomson S. Westcott, M.D. Philadelphia: W. B. Saunders. 1894. Pp. 1190. For sale by subscription only.

This elaborate text-book has been written by a syndicate of sixty-three authors, of whom about fifty are directly connected with a medical college. This practically insures the sale of the work to the medical students at the institutions where the "American teachers" teach. The steady increase in this manner of medical book producing, has some advan-

tages, but it is, in the long run fatal to individual authorship. It is true that the "text-book" being an exhibit of the current information, and therefore of temporary value, is better adapted to syndicate writing than most other books but the practice is of very doubtful utility to the profession.

The work is encyclopedic in scope and after the introduction is divided into thirteen parts, as follows: 1, "Injuries to birth and diseases of the new-born; 2, "The Diathetic Diseases;" 3, "The Acute Infectious Diseases;" 4, "General Diseases not Infectious;" 5, "Diseases of the Blood;" 6, "Diseases of the Digestive Organs;" 7, "Diseases of the Nervous System;" 8, "Diseases of the Respiratory System;" 9, "Diseases of the Heart;" 10, "Diseases of the Genito-Urinary System;" 11, "Diseases of the Skin;" 12, "Diseases of the Ear;" 13, "Diseases of the Eye."

The book is well printed, and the illustrations are excellent, some of them colored plates in the best style of the art. The prescriptions are all written in the old English system of weights and measures instead of the modern decimal system. The unusually copious index adds much to its value as a work of reference. While there is less weight given to antiseptic therapeutics in the treatment of the different diseases than one would expect, taking into consideration the existing state of bacteriological science as set forth in the pathological portions, yet the treatment fairly represents the current practice. In pathology the work is abreast of the most recent accepted facts. As a whole the book is highly creditable in every respect to American authorship, and a worthy companion to the other "text-books" of the series.

A Text-Book on Diseases of the Eye. By HENRY D. NOYES, A.M., M.D. Complete in one octavo volume of 816 pages, profusely illustrated with 269 wood-engravings in the text, five chromo-lithographic plates, and ten plates in black and colors. Second Revised Edition. Price, in cloth, $6.00; leather, $7.00. New York: William Wood & Company.

That the first edition of this work has been exhausted in three years, is the best of proof that the author has succeeded well in his endeavor to furnish the American medical student a good practical text-book on ophthalmology. In the revised edition the general arrangement has not been changed; but many additions have been made in order to embody in the book the more recent discoveries and well-established views in ophthalmology.

It deserves particular mention that the subject of eye-strain and its important relation to the nervous system is a great deal more thoroughly treated than in the first edition. The chapter on granular conjunctivitis has been partly re-written, and in its new form is one of the best expositions of the various phases of this complex malady. All through the book the great care and good judgment of the author is noticeable in the selection of additional reading matter. It is, therefore, much to be regretted that the author has not bestowed the same attention on a careful revision of the phraseology in order to expunge the many inaccurate statements and ambiguous phrases which occurred in the first edition. For instance, on page 89 we read: "Then sol. sulph. atropia, gr. iv ad ℥j, will be dropped into the eyes from three to ten times within one to three days." How are we to interpret these directions? Shall the drops be used three or ten times each day, or three to ten times in all?

On page 206 *loss of sight of the one eye* is mentioned as one of the conditions which influence the capacity of fusion of the separate retinal images! How can the patient have double images if one eye is blind?

In the treatment of ophthalmia neonatorum on page 324 the following instruction is given: "If the daily personal attendance of the physician is not possible, a solution (gr. v ad. ℥i) of silver nitrate may be dropped between the lids three times daily, taking pains to insure its entrance beneath the upper lid by lifting it off the globe and at the same time avoiding contact of the caustic with the cornea." This is very bad advice in every respect; it is bad enough indirectly to admit that a physician could not see a case of ophthalmia neonatorum every day; but it is worse to let, anybody use nitrate of silver solutions on the eyes under so critical conditions; and it is absurd to insist that the caustic shall not come in contact with the cornea when it is allowed to spread all over the conjunctiva of the upper lid. That is asking for a physical impossibility.

In a work intended to be a guide for students and physicians, accuracy and clearness in the expression of views is of the greatest importance; any ambiguity which puzzles the student's understanding of the author's meaning, mars the usefulness of a text-book. If in the next edition which undoubtedly soon will become necessary, these defects are removed, this work will be the perfect text-book on ophthalmology.

Gonorrhea: Being the Translation of Blenorrhea of the Sexual Organs and its Complications. By DR. ERNEST FINGER, Docent at the University of Vienna. One volume, of 330 pages, octavo, illustrated by numerous wood-engravings, and by seven chromo-lithographic plates. Third Revised and Enlarged Edition. Bound in muslin, gold lettered, $3.00. New York: William Wood & Company.

The author in this edition has given a statement of the advances which have been made since the appearance of the second edition. The author says in his preface: "The possibility of more ready culture of the gonococcus and greater precision in the question of mixed infections, constitute important achievements. On the other hand, I have been able, through the great kindness of Prof. Weichselbaum, to make the first systematic anatomic examinations of chronic urethritis. These points form the principal changes and additions to be found in the present edition."

This work is one of the most systematic in any language on this disease. The chapter on its history is especially interesting, and the author gives a *résumé* of the subject from the earliest mention in the Mosaic writings down to those of the recent bacteriologists. This portion of the book is marred by some errors in spelling, due to bad proof reading; as "Rhages" instead of Rhazes; "Abulcasem" instead of Albucasis or Albucasem (page 3); "Guido de Cauliaco" instead of Guy de Chauliac. (It is only fair to say that the Latin spelling was "Guidon de Caulhiaco.") But these are minor errors. The work is well worthy of a place in the library of every progressive physician and surgeon.

Transactions of the Southern Surgical and Gynecological Association. Vol VI. Sixth Session, held at New Orleans, La., November, 1893. Published by the Association. 1894.

This JOURNAL published a fairly complete abstract of the proceedings of this flourishing Association shortly after the meeting; several of the papers have been printed in the JOURNAL and elsewhere.

The papers are specially noticeable for their practical character. Many physicians of highest standing in America, without regard to the line of Mason and Dixon, were among the contributors.

The paper of the most enduring value is that by L. S. McMurtry on "Ephraim McDowell." Dr. McMurtry, long a resident of Danville, Ky., the theater of McDowell's great pioneer work, has gathered in this paper all the local information obtainable, in addition to the published records of McDowell and his operative work.

The high class of the papers in this volume, the excellent typography, and the careful editing by the Secretary, Dr. W. E. B. Davis, make it fully equal to its predecessors, and a credit to the Society. The next meeting will be held at Charleston, S. C.

ASSOCIATION NEWS.

Section on Ophthalmology.—Members of the Section who have not yet forwarded the titles of their papers will confer a favor by sending the same to the Secretary.

Preliminary program: Address by Chairman of Section.

"A Clinical Study of the Myopic Eye—Its Genesis and Treatment," Dr. S. D. Risley, Philadelphia, Pa.

"Asthenopia," Dr. C. M. Hobby, Iowa City, Iowa.

"The Physiological Basis of certain Oculo-muscular Phenomena, Incorrectly termed Anomalies," Dr. F. B. Eaton, Portland, Oregon.

"The Value of Retinoscopy as the Crucial test of the Correction of Refraction Errors," Dr. B. Alexander Randall, Philadelphia, Pa.

"Toxic Amblyopia," Dr. James A. Lydston, Chicago, Ill.

"Amblyopia," Dr. A. H. Voorhees, San Francisco, Cal.

"Are Low Degree Lenses of purely Mythical Value?" Dr. H. M. Starkey, Chicago, Ill.

"Great Value of Weak Lenses in the Correction of Eye Pains," Dr. Julian J. Chisholm, Baltimore, Md.

"Sub-conjunctival Injections in the Treatment of Eye Diseases," Dr. Wm. E. Briggs, Sacramento, Cal.

"Fractures of the Orbit," Dr. J. F. Fulton, St. Paul, Minn.

"Cyclophoria—Its Detection and Treatment," Dr. George H. Price, Nashville, Tenn.

"Status of Skiascopy," Dr. H. V. Würdemann, Milwaukee, Wis.

"School Children's Eyes—A Plea for the Examination of every Child's Eyes when commencing to attend School," Dr. W. F. Southard, San Francisco, Cal.

"Iritis and its Treatment," Dr. Louis F. Love, Philadelphia, Pa.

"Some Observations upon Gould's Method of Managing Exophoria," Dr. Leartus Conner, Detroit, Mich.

"Conservative Treatment of Injuries of the Eyeball, with Cases," Dr. Lewis H. Taylor, Wilkesbarre, Pa.

"Treatment of Purulent Ophthalmia," Dr. X. C. Scott Cleveland, Ohio.

"Retinitis Pigmentosa," Dr. Dudley S. Reynolds, Louisville Ky.

"The Visual Zone of the Dioptric Media and its Study by Skiascopy," Dr. Edward Jackson, Philadelphia.

Report of the Committee on "The Value of Objective Tests for the Determination of Ametropia, Ophthalmoscopy, Ophthalmometry and Skiascopy," Dr. Edward Jackson, Chairman, Philadelphia, Pa.

ALBERT R. BAKER, M.D., Chairman,
122 Euclid Ave., Cleveland, Ohio.
LEWIS H. TAYLOR, M.D., Secretary,
41 S. Franklin St., Wilkesbarre, Pa.

Section on Dental and Oral Surgery.—The following papers are announced for this Section:

Address, by Dr. M. H. Fletcher.

"Professional Ethics," by Dr. Van Orden.

"The Lateral Incisor," by Dr. C. L. Goddard.

"The Teeth of our School Children—What shall be done to save Them?" by Dr. Jno. C. McCoy.

"Pyorrhea Alveolaris. What it is and what the Dentist can do for it," by Dr. L. L. Dunbar.

"Pyorrhea Alveolaris," by Dr. W. J. Younger.

"Remote Effects of Oral Lesions," by Dr. W. B. Sherman.

"The Systemic Factor in the Treatment of Dental Caries," by Dr. G. S. Dean.

"The Present and Future Status of the Dental Practitioner," by Dr. J. D. Hodgen.

"Operations on Congenital Cleft Palate," by Dr. Robert McLane.

"Random Thoughts on our Specialty," by Dr. A. E. Baldwin.

"Pathological Notes on Neoplasms of the Maxillæ, with Cases and Photographs," by Dr. Vida A. Latham.

"The Present Scientific Status of Hypnotism," by Dr. W. X. Sudduth.

Dr. R. J. Taft.

Dr. E. S. Talbot.

SOCIETY NEWS.

The Cleveland Medical Society.—Dr. William Pepper, of the University of Pennsylvania, will address the Cleveland Medical Society Friday evening, June 22, and will also give a clinic on the following forenoon in one of the hospitals in the city, to which the profession generally will be invited.

OSCAR T. THOMAS, Secretary.

The Indiana Medical Society.—The forty-fifth annual meeting of the Indiana State Medical Society will occur in Indianapolis, Thursday and Friday, May 17 and 18, 1894. The sessions will be held in Plymouth Church, southeast corner of Meridian and New York Streets. The meeting will be called to order promptly at 10 o'clock Thursday morning, May 17. The program this year promises to be a valuable one, and it is earnestly desired that there be a large attendance at the meeting. Arrangements have been made with the Central Traffic Association whereby the usual one and one-third railroad rate may be secured by those desiring to attend the meeting. In securing railway tickets, full fare will be paid to Indianapolis, the purchaser at the same time *requesting his ticket agent to furnish him with a certificate of such purchase.* This will be signed at Indianapolis by the Chairman of the Committee on Arrangements, which will entitle the holder to a return ticket at one-third the regular fare. Failure to obtain a certificate will necessitate the payment of full fare both ways. Good hotel accommodations can be secured in Indianapolis for $1.50 per day and upwards. All members expecting to present papers at this meeting must send the titles of such papers to the Chairman of the Committee on Arrangements not later than April 30.

FREDERICK C. WOODBURN,
Chairman of the Committee on Arrangements.

National Association of Railway Surgeons.—The following is the preliminary program of the seventh annual meeting of the National Association of Railway Surgeons, to be held in Harmony Hall, Galveston, Tex., May 8, 9, 10 and 11, 1894.

OFFICERS OF THE ASSOCIATION.

President: Surgeon W. J. Galbraith, Omaha, Neb.

Vice-Presidents: Surgeons E. R. Lewis, Kansas City, Mo.; Thomas H. Manley, New York, N. Y.; E. F. Yansey, Sedalia, Mo.; D. F. Stuart, Houston, Tex.; E. A. McGannon, Brockville, Ont., Can.; E. G. Cochran, Greenville, Tex.; W. R. Blakeslee, Forest City, Pa.

Secretary: J. M. Dinnen, Fort Wayne, Ind.

Assistant Secretary: J. H. Ford, Wabash, Ind.

Treasurer: R. Harvey Reed, Columbus, Ohio.

Executive Committee: Surgeons B. F. Wilson, Chairman, Slater, Mo.; J. B. Murdoch, Pittsburg, Pa.; G. L. Hoege, Fostoria, Ohio; Alexander J. Mullen, Jr., Michigan City, Ind.; J. B. Murphy, Chicago, Ill.; A. A. Thompson, Waxahatchie, Tex.; C. K. Cole, Helena, Mont.

Committee of Arrangements: Surgeons C. H. Wilkinson, Chairman, Galveston, Tex.; D. F. Stuart, Houston, Tex.; T. F. Wagley, Gleburne, Tex.; A. A. Thompson, Waxahachie, Tex.; C. C. Barrell, Galveston, Tex.

Committee on Transportation: Surgeons W. B. Outten, Chairman, St. Louis, Mo.; J. B. Murdoch, Pittsburg, Pa.; C. M. Daniels, Buffalo, N. Y.; Mr. Harry P. Robinson, Chicago, Ill.

ORDER OF EXERCISES.

Tuesday, May 8—Morning Session—10 A.M.

Opening of the seventh annual meeting. Surgeon C. H. Wilkinson, Chairman Committee of Arrangements.

Divine invocation.

Address of welcome, by his honor, the Mayor of Galveston.

Address of welcome in behalf of the citizens.

Response to the address of welcome. Dr. Alexander J. Mullen, Jr., Michigan City, Ind.

Delivery of the gavel to the President. Chairman Committee of Arrangements.

President's address. Dr. W. J. Galbraith, chief surgeon U. P. Railroad, Omaha, Neb.

Annual report of the Treasurer.

Tuesday, May 8—Afternoon Session—2 P.M.

Contributions to the study of fractures:

a, "Conservatism in the Treatment of Compound Comminuted Fractures of the Leg," by Dr. Geo. R. Dean, Surgeon R. & D. Railroad, Spartansburg, S. C.; *b*, "Compound Fractures," by Dr. Milton Jay, Chief Surgeon C. & E. I. Railroad, Chicago, Ill.; *c*, "Plaster-paris Splints to Fractures Simple

and Compound," by Dr. J. G. Buchanan, Surgeon Pennsylvania Company, Pittsburg, Pa.

Contribution to the study of anesthetics:

a, "Anesthesia (local and general) and its Proper Production," by Dr. E. A. McGannon, Surgeon G. T. Railroad, Brockville, Ont., Can.

Wednesday, May 9—Morning Session—9 A.M.

Contributions to the study of spinal and nervous injuries:

a, "Fracture and Dislocation of the Spine," by Dr. Thomas H. Manley, Surgeon C. P. E. & W. Railroad, New York, N.Y.; *b*, "Diagnosis of Injuries of the Cord and its Envelopes with and without Fracture of the Spine," by Dr. C. H. Hughes, Surgeon Mo. Pac. Railroad, St. Louis, Mo.; *c*, "Treatment of Injuries of the Cord and its Envelopes with and without Fracture of the Spine," by Dr. W. B. Outten, Chief Surgeon Mo. Pac. Railroad, St. Louis, Mo.; *d*, Medico-Legal Relations of Injuries of the Cord and its Envelopes, with and without Fracture of the Spine," by Clark Bell, Esq., Member Bar, New York, N. Y.

Contributions on miscellaneous subjects:

a, "Some of the Uses of Hot Water in Recent Injuries in Railway Surgery," by Dr. N. A. Drake, Surgeon C. R. I. & P. Railroad, Kansas City, Mo.; *b*, "Minor Surgery," by Dr. J. D. Myers, Surgeon C. & O. Railroad, Huntington, W. Va.

Wednesday, May 9—Afternoon Session—2 P.M.

Contributions to the study of injuries of the eye:

a, "Color Blindness," by Dr. D. Emmett Welsh, Surgeon G. R. & I. Railroad, Grand Rapids, Mich.; *b*, "Exhibition of New Tests for Simulated Blindness in One Eye," by Dr. James L. Minor, Oculist K. C. M. & B. Railroad, Memphis, Tenn.; *c*, "Evisceration vs. Enucleation, following Injuries of the Eye," by Dr. A. E. Prince, Surgeon Wabash Railroad, Springfield, Ill.

Contributions to the study of miscellaneous subjects:

a, "Rectal and Anal Surgery and its Relation to Railway Injuries," by Dr. S. G. Gant, Surgeon K. C. Ft. S. & M. Railroad, Kansas City, Mo.; *b*, "Should the National Association of Railway Surgeons become a Delegatory Body," by Dr. R. Harvey Reed, Consulting Surgeon B. & O. and Big Four Railways, Columbus, Ohio; *c*, "Quarantine and its Relation to the Railway Surgeon and Railway Surgeons Relation to Quarantine," by Dr. Van B. Thornton, Local Surgeon H. & T. C. Railroad, Hempstead, Texas.

Thursday, May 10—Morning Session—9 A.M.

Contributions to the study of spinal and nervous injuries:

a, "Litigation Psychosis," by Dr. Matthew D. Field, Surgeon Manhattan Railway Company, New York, N. Y.; *b*, "A Case that ought to have been one of Railway Spine and its Treatment," by Dr. C. M. Woodward, Surgeon C. M. & J. Railroad, Tecumseh, Mich.; *c*, "A Novel Case of Cerebral Traumatism," by Dr. J. R. Barnett, Surgeon C. & N.-W. Railroad, Neenah, Wis.; *d*, "A Case of Fracture of the Spine; operation followed by improvement," by Dr. John E. Sylvester, Surgeon C. H. V. & T. Railroad, McArthur, Ohio.

Contributions on miscellaneous subjects:

a, "The Evolution of Railway Surgery," by Dr. E. R. Lewis, Surgeon Wabash Railroad, Kansas City, Mo.; *b*, "Dressing of the Stump in Amputation," by Dr. A. B. Brumbaugh, Surgeon Pennsylvania Railroad, Huntington, Pa.; *c*, "Railways and Railway Surgery," by Clark Bell, Esq., New York, N. Y.

Thursday, May 10—Afternoon Session—2 P.M.

Contributions to improvements in appliances in cases of emergency:

a, "Improved Railway Stretcher," by Dr. R. Ortega, Chief Surgeon M. I. Railroad, Ciudad Porfirio Diaz, Mex.

Contributions on miscellaneous subjects:

a, "Thiersch's Grafts in Extensive Destruction of Soft Parts about Large Joints," by Dr. Henry W. Coe, Surgeon East Side Railroad, Portland, Ore.; *b*, "A Digest of 400 Consecutive Railway Cases," by Dr. Howard J. Williams, Surgeon Central Railway of Georgia, Macon, Ga.; *c*, "Management of Burns and Scalds, with Cases," Dr. C. K. Cole, Chief Surgeon Montana Central Railroad, Helena, Mont.

Contributions to the study of spinal and nervous injuries:

a, "A Case of Spinal Injury with Rupture of Intestine; operation; recovery," by Dr. I. N. Warren, Chief Surgeon S. C. & N. Railroad, Sioux City, Iowa; *b*, "Concussion," by Dr. Geo. W. Cox, Surgeon S. P. Railroad, Brownsville, Ore.

Friday, May 11—Morning Session—9 A.M.

Contributions to the study of shock:

a, "Shock—its Phenomenal Results," by Dr. Willis M. Wilson, Surgeon B. & M. R. Railroad, Curtis, Neb.; *b*, "Clinical Cases—Shock, Hemorrhage, Tendon, Suture," by Dr John Van Duyn, Surgeon West Shore Railroad, Syracuse, N. Y.; *c*, "Treatment of Shock," Dr. James H. Letcher, Chief Surgeon O. V. Railroad, Henderson, Ky.

Installation of officers elect.

Friday, May 11, 3 P.M. Excursions on the bay; excursion down the island; excursions over to mainland. All members and accompanying members of their families invited.

Saturday, May 12—7 A.M.

Excursion to Houston, Austin, San Antonio. Through the courtesy of the management of the Houston & Texas Central, Gulf Colorado & Santa Fe, International & Great Northern and Southern Pacific Railways an excursion has been arranged and will be conducted under the auspices of Dr. D. F. Stuart, Chief Surgeon of the H. & T. C. Railroad and Dr. W. B. Outten, Chairman Committee on Transportation, and Dr. C. H. Wilkinson, Chairman Committee of Arrangements. Receipts for the annual dues for next year will be accepted for the transportation of members and their families on this excursion, the same as last year.

W. J. GALBRAITH, M.D., President.
C. H. WILKINSON, M.D.,
Chairman Committee of Arrangements.
J. M. DINNEN, M.D., Secretary.

Nebraska State Medical Society.—The twenty-sixth annual meeting of the Nebraska State Medical Society will be held in the chapel of the State University buildings, Lincoln, Nebraska, May 1, 2 and 3, 1894.

Officers: President, A. S. Von Mansfelde, Ashland; Vice-Presidents, B. F. Crummer, Omaha, Geo. L. Humphreys, Kearney; Secretary, George Wilkinson, Omaha; Corresponding Secretary, B. D. Davis, McCook; Treasurer, W. M. Knapp, Lincoln; Committee of Arrangements, F. D. Crim, H. B. Lowry, M. H. Everett, Lincoln.

Call to order; payment of dues; report of the Committee on Credentials and election of new members; reading of the minutes; report of the Committee of Arrangements.

President's address: "The Constitution and Code of the AMERICAN MEDICAL ASSOCIATION—Individual and Society Relations Thereto."

Annual reports of *a*, Secretary; *b*, Corresponding Secretary; *c*, Treasurer. Business requiring early consideration; report of the Special Committee on Sanitary Science; report of the Special Committee on Medical Legislation; report of Committee on Grievances; report of Committee on Necrology; miscellaneous.

Practice of Medicine: "The Diagnosis of Valvular Disease of the Heart," Dr. H. B. Lowry, Lincoln. Discussion, Dr. A. R. Mitchell, Lincoln; Dr. E. M. Whitten, Nebraska City.

Surgery: "Some Observations on Tuberculosis of the Osseous System," Dr. J. P. Lord, Omaha. Discussion, Dr. J. S. Butler, Superior; Dr. G. L. Humphreys, Kearney.

Obstetrics: "The Responsibility of the Obstetrician from a Gynecological Point of View," Dr. Sherman Van Ness, Omaha. Discussion, Dr. P. L. Hall, Mead.

Gynecology: "Endometritis, Pathology and Treatment," Mrs. M. H. Jonas, Omaha. Discussion, Dr. F. D. Crim, Lincoln; Mrs. E. S. Daily, Omaha.

Nervous and Mental Diseases: "The advancement of the Care and Treatment of the Insane," Mrs. Sophronia N. Lane, Asylum. Discussion, Dr. S. C. Spalding, Omaha; Dr. G. W. Johnston, Fairmont.

Anatomy and Physiology: "The Anatomy of the Reflexes with their Interpretation in Rectal and Genito-Urinary Diseases," Dr. Charles Allison, Omaha. Discussion, Dr. A. R. Mitchell, Lincoln; Dr. F. E. Coulter, Omaha.

Ophthalmology and Otology: "Optic Neuritis following La Grippe," Dr. D. C. Bryant, Omaha. Discussion, Dr. J. W. Bullard, Pawnee City; Dr. W. L. Dayton, Lincoln.

Materia Medica and Therapeutics: "The Therapy of the Respiratory Tract," Dr. W. H. Christie, Omaha. Discussion, Dr. E. M. Whitten, Nebraska City; Dr. W. B. Ely, Ainsworth.

Medical Jurisprudence, Medical Chemistry and Toxicology: 1, "Medico-Legal Aspects of the Social Evil." 2, "On the Legal Responsibility of the Physician upon Whose Certificate a Sane Person is Committed to an Insane Asylum," Dr. M. V. B. Clark, Sutton. Discussion, Dr. Chas. L. Kerr, Falls City; Dr. Claud Watson, Nebraska City.

Pathology and Histology: "Etiological Factors that Cause Pathological Changes," Dr. Wm. Protzman, Lincoln.

Discussion, Dr. George H. Littlefield, Syracuse; Dr. W. F. Milroy, Omaha.

Public Hygiene and Medical Legislation: "The Medical Law of Nebraska and its Enforcement," Dr. J. V. Beghtol, Friend. Discussion, Dr. B. F. Crummer, Omaha; Dr. F. D. Haldeman, Ord.

Dermatology: "Eczema," Dr. E. E. Womersley, Omaha. Discussion, Dr. W. O. Henry, Omaha; Dr. A. B. Anderson, Pawnee City.

Laryngology: "Adenoid Vegetation with Illustrative Cases," Dr. F. S. Owen, Omaha. Discussion, Drs. H. S. Burrell and George Wilkinson, Omaha.

"The Treatment of Asthma," Dr. J. Lue Sutherland, Grand Island.

"Lessons from a Few Surgical Cases," Dr. W. O. Henry, Omaha.

"Ulceration of the Stomach," Dr. F. E. Coulter, Omaha.

"The Conservative Treatment of Pelvic Disease in the Female," Dr. B. F. Crummer, Omaha.

"The Surgical Treatment of Large Vascular Nervi," Dr. A. F. Jonas, Omaha.

"Brief Thoughts on Surgical Methods in General Practice," Dr. M. L. Hildreth, Lyons.

"Memoranda—The Course and Diagnosis of Acquired Syphilis," Dr. H. Clayton Sumney, Omaha.

"Remarks upon Recent Aids to the Diagnosis and Treatment of Diseases of the Bladder, Ureters and Kidneys in the Female," Dr. J. E. Summers, Jr., Omaha.

"Three Functions of the Liver Normally and Pathologically Considered," Dr. J. S. Foote, Omaha.

"Legislation for the Prevention of Blindness," Dr. H. Gifford, Omaha.

"Detection of Sugar in the Urine," Dr. F. Martin Mueller, Omaha.

Report of Standing Committees; miscellaneous and unfinished business; election and installation of officers; selection of next place of meeting; banquet, Thursday evening.

The following constitutional amendments will need attention at this meeting: Amendment to Constitution, Article II, Sec. 2, by Dr. J. E. Summers, Jr.:

"That any legally qualified practitioner shall be eligible for membership in this Society, whatsoever his source of education, provided that he or she proclaims in writing adherence to no particular dogma or line of practice other than rational medicine."

Amendment to By-laws by Dr. A. S. von Mansfelde. Add at the end of No. 2:

"Except the Committee on Credentials which shall be composed of one member from each Congressional District and the Recording Secretary, who shall be ex-officio chairman of such Committee."

Transportation—All of the railroad companies have granted a reduction in rates—one and one-third fare for the round trip—on the certificate plan. Take certificate from ticket agents from whom tickets are purchased in going to the meeting. Have it countersigned by the Secretary, which will secure a return ticket at one-third fare.

GEORGE WILKINSON, Sec'y.

MISCELLANY.

Medical Director Albert L. Gihon, U. S. Navy, delivered the address at the commencement of the Albany Medical College on the 18th instant.

Dr. M. L. James, of Richmond, Va., has retired from the professorship of Practice of Medicine of the Medical College of Virginia.

The Graham Matter of the Brain.—"Do you vegetarians claim that the use of unbolted flour bread is good for brain-workers?"

"Certainly. It stimulates the production of graham matter."—*Chicago Tribune.*

Dr. Corydon L. Ford, whose death was announced in the JOURNAL of April 21, left an estate estimated at $250,000. His will bequeathed $9,000 to the University of Michigan, the income to be used to purchase books for the general library and $3,000 to the Students' Christian Association. The remainder of the estate is to be distributed among his relatives and certain specified religious and missionary associations of the Congregational denomination.

Honorary Presidents International Medical Congress.—The International Medical Congress has appointed its Honorary Presidents for the ensuing Congress in Russia. The list is as follows: For America, Dr. J. B. Murphy, of Chicago; for Germany, Bergman, of Berlin; for Switzerland, Kocher, of Berne; for Ireland, Stokes, of Dublin; for England and Great Britain, Sir William MacCormac; for Austria, Mikulicz, of Vienna; for Scotland, Macewen, of Glasgow. Dr. J. B. Murphy, of Chicago, the American Honorary President, is well known to the profession through his work in abdominal surgery and the success of the intestinal anastomosis button, of which he is the inventor.

The D. Hayes Agnew Memorial.—The D. Hayes Agnew Memorial Committee, organized a year ago to secure a lasting memorial of Dr. Agnew in connection with the University Hospital, have pleasure in reporting that subscriptions have been promised of sufficient amount to give reasonable assurance of the speedy and successful carrying out of the project. The plan includes not only the Children's Ward (for the building of which this Associate Committee was established and for which it is so earnestly laboring), but also an amphitheater and ward class rooms, with wards for men and for women,—the whole to be a model in perfection of details and completeness of appliances, and thus a fitting representation of the wonderfully full and complete work of Dr. Agnew.

The State Legislature, at its last session, made an appropriation of $80,000 to the University Hospital for building purposes, provided that an equal sum of $80,000 be raised by the friends of the Hospital, and paid in cash, available for construction purposes. The Managers of the Hospital, appreciating the eminent propriety of our movement, have consented to give to the entire wing the honored name of D. Hayes Agnew. Toward the additional $80,000 to be so raised, about $60,000 can now be counted upon as available in cash on or before May 1, 1894, leaving only about $20,000 more to be secured by that time, so that building operations may begin this spring, and the State appropriation be drawn and expended within the two years contemplated in the Act.

It is to be hoped that, in addition to the building fund, there may also be secured a sum sufficient for the beginning of an endowment. Such a memorial will best attest the affection inspired by Dr. Agnew's life of usefulness and the example of devotion to his profession both as teacher and practitioner.

The grant by the Legislature is a recognition of the work done by the University and its Hospital, to which Dr. Agnew gave the best years of his busy life, and the subscription supplementing and securing that appropriation will show how his many friends, patients, and students honor his memory.

All those who desire to join in this memorial of a great surgeon and good man can do so by sending their subscriptions to the Treasurer, Mr. Eugene Delano, of Messrs. Brown Brothers, at the banking house, southeast corner of Fourth and Chestnut Streets, Philadelphia.

By order of the Committee,

J. S. MACINTOSH, D.D., Chairman,
J. G. ROSENGARTEN, Secretary,
WM. PEPPER, M.D., Provost of the University.

Resignation of Prof. Wm. Pepper as Provost of the University of Pennsylvania.—The following is the text of the letter of Prof. Pepper:

With deep thankfulness I recognize that the University has reached a stage of development and prosperity which justifies me in laying down the high office you intrusted to me more than thirteen years ago, and which I have held as long as it was possible to combine the administrative labors of Provost with the demands of medical teaching and practice. This time has now passed, and I beg, therefore, to tender my resignation to take effect after the coming Commencement.

The close of the current session will witness the completion of the formative period of the University. From a group of disconnected schools there has been gradually

organized a great academic body, complete in its unity and instinct with varied yet harmonious activities. Mutual confidence and coöperation have developed a system strong enough for effective central control, yet so flexible as to admit affiliation with many separate organizations. To our University is due the credit of establishing university extension in America, yet the important and successful society which controls this movement has no organic relations with the University, save that the Provost is *ex officio* the honorary president. The Wistar Institute of Anatomy and Biology, a magnificent memorial to the founder of American anatomy, has a separate charter and is not owned by the University, yet is governed by a board, the majority of whose members are appointed by yourselves. The University Hospital, which has grown so prosperously, is a special trust and administered by a board of twenty-two members, only four of whom are appointed by the Trustees of the University.

The Department of Archæology and Paleontology, under whose energetic operations there is developing rapidly a museum of high rank, is governed by a board of not less than thirty-six members, of whom only six are appointed by the Trustees of the University. Reference is made to these familiar instances to illustrate the admirable results which may develop under a system which excludes rigid control, and rests upon mutual confidence and a common devotion to a great cause.

It has been a chief aim of your Board to demonstrate to the people of this great Commonwealth that the University is truly the voluntary association of all persons and of all agencies who wish to unite in work for the elevation of society by the pursuit and diffusion of knowledge and truth. No less important has been the establishment of the principle that the University, so far from being a private and exclusive corporation, is essentially and organically a part of the municipality. The large future of the University was secured when, in 1872 and in 1883, City Councils voted, without a dissenting voice, the transfer to the University of splendid tracts of ground, in consideration of the establishment in perpetuity of fifty free beds in the Hospital for the poor of Philadelphia, and of fifty prize scholarships in the College, to be awarded to graduates of the public schools of Philadelphia. The subsequent accessions of territory which have brought the domain of the University up to fifty-two acres, in a compact body in the center of the city, have been the logical consequences of these great steps; and so faithfully have all the trusts and conditions been executed, that it has come to be recognized by the municipal authorities that it is more profitable to the city to give freely to the University anything in its power to bestow, which is needed for the development of that institution, than to dispose of it elsewhere, even at a great price. It needs only the resolute continuance of this wise policy to secure for the University full recognition as a branch of the city government, with a duly accredited representative of its great constituency in her Councils.

Progress has also been made toward the establishment of the essential principle that the University is in right, and should be in fact, the head of the educational system of the entire Commonwealth. We may fairly claim to have done much toward securing a recognition of the view that the encouragement of higher education, by the municipality and the Legislature, is as proper and important in the older communities of America as it has been decided to be in the newer States.

"While the unification of the University and the establishment of broad lines of policy may seem to be the most important work of the past thirteen years, it will be found that the resources of the University and the educational work in each department have been successfully promoted. In 1881 its property was fifteen acres, while at present there are owned or controlled by the University, in a continuous tract and solely for educational purposes not less than fifty-two acres. The values of the lands, buildings and endowment in 1881 may be estimated at $1,600,000; it is now over $5,000,000. Prior to the date of the late John Henry Towne's great bequest, the University had never received a single large gift or legacy. During the current year ending Sept. 1, 1894, there will be acquired in lands, buildings, money and subscriptions not less than $1,000,000. The members of the teaching force in 1881 numbered 88, and the students in all departments 981; at this time the former are 268 and the attendance has reached 2,180, representing every State of the Union and no less than thirty-eight foreign countries. The College Department has attained a national distinction, and its complete re-organization, which has now been accomplished successfully, gives sure promise of sound and rapid progress. The Medical School has been advanced to preëminence in equipment and prosperity, while plans now maturing will place it abreast of the great schools of Europe. The Law School has effected the prolongation and elevation of its curriculum, and has deservedly won national repute. Encouraging progress has been made toward providing an admirable building on an approved site, so that the future eminence of the school is assured. Gratifying reports may be made of the position of the Dental and Veterinary Departments; and well considered plans for their still further development need only time for their fulfillment. Upon this vigorous basis rests the Department of Philosophy, which although organized as late as 1884, and still without special endowment, has already 154 students. It represents the University in its highest and best intellectual life; it affords inspiration to teachers and students; it has enabled us to extend the richest privileges of the University to women on equal terms with men; it points the way to large endowment of rich research and advanced scholarship."

The necessity of dormitories to the development of the best university life has come to be clearly recognized by your Board, and generous friends stand ready to supply this important need.

It is pleasant, in these days of strength and prosperity, to reflect upon those of doubt and struggle, when ridicule met the assertion, the truth of which is now freely conceded, that nowhere can a great university be developed so favorably as in a great city.

In closing my term of service as Provost, I may be permitted to allude to the motives which impel me to this step. The labor of these thirteen years has been so severe, in connection with my professional duties in the Medical School and with the extensive medical practice necessary to provide the funds which have enabled me to initiate nearly all of the large movements undertaken during this time, that I have often felt that my life was specially preserved for the work. It has, however, been growing evident for several years past that the time was approaching when the immense extent of the University interests would demand the undivided activity of the most energetic man. It has now become necessary for me to choose between administrative work and medical science, and my devotion to the latter has determined the choice.

No official has ever been associated with more affectionate and indulgent colleagues, or has enjoyed more loyal coöperation than has been extended to me. I am confident that the choice of my successor will be wisely and promptly made. I do not leave the service of the University, but will remain, with more free hands, ready to serve her every interest with utmost devotion.

I invoke upon your continued labors in the government of this grand institution the richest blessings of Almighty God, who has in the past so signally guarded it.

April 23, 1894. WILLIAM PEPPER.

THE PUBLIC SERVICE.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from April 14, 1894, to April 20, 1894.

Capt. OGDEN RAFFERTY, Asst. Surgeon, leave of absence granted is extended eighteen days.

Capt. ALONZO R. CHAPIN, Asst. Surgeon, will report in person to the President of the Army Retiring Board at Ft. Bliss, Texas, for examination by the Board. By direction of the President.

First Lieut. CHARLES WILLCOX, Asst. Surgeon, is relieved from temporary duty at Angel Island, Cal., and will rejoin his proper station, the Presidio of San Francisco, Cal.

First Lieut. HARLAN E. MCVAY, Asst. Surgeon, par. 2, S. O. 68, A. G. O., is so amended as to direct him, on being relieved from duty at San Carlos, Ariz., by First Lieut. STRAUB, Asst. Surgeon, to report for duty at Angel Island, Cal., instead of Ft. Huachuca, Ariz.

First Lieut. ALLEN M. SMITH, Asst. Surgeon, will be relieved from duty at Ft. Custer, Mont., at the expiration of his present leave of absence, and will report in person to the commanding officer, Ft. Reno, Oklahoma Ter., for duty at that post.

First Lieut. JAMES M. KENNEDY, Asst. Surgeon, is relieved from duty at Ft. Riley, Kan., and ordered to Ft. Custer, Mont., for duty.

Major PETER J. A. CLEARY, Surgeon, so much of par. 13, S. O. 79, A. G. O., as relates to him, is so amended as to direct him, on being relieved from duty at Ft. McPherson, Ga., to report for duty at Ft. Wingate, N. M., instead of Ft. Custer, Mont., for duty at that post, to relieve Major WASHINGTON MATTHEWS, Surgeon. Major MATTHEWS, on being so relieved, will repair to Washington, D. C., and report in person to the Surgeon-General for temporary duty.

PROMOTION.

Capt. JAMES C. MERRILL, Asst. Surgeon, to be Surgeon with the rank of Major, March 13, 1894, vice BARTHOLF, retired from active service.